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HOUSEHOLD
HEALTH

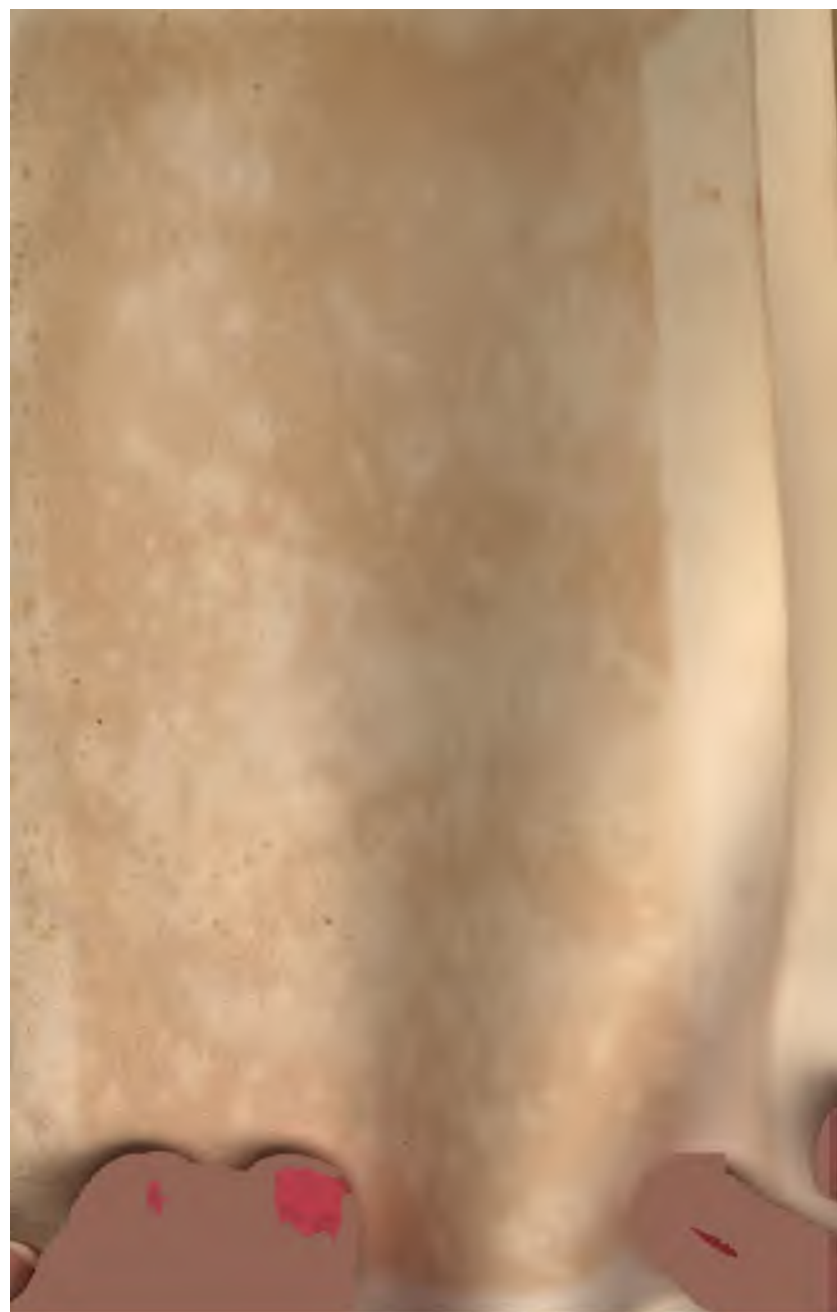


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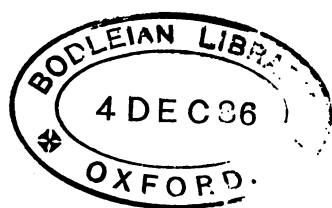
BY
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CONTENTS.

CHAPTER	PAGE
I. HABITS OF HEALTH	7
II. SUNLIGHT AT HOME	12
III. THE OUTSIDE OR AREA OF THE HOUSE ...	21
IV. DUST-BINS	30
V. THE LARDER	37
VI. THE DRAINS	43
VII. SOME PROOFS OF BAD DRAINS	47
VIII. GOOD DRAINS	52
IX. THE WATER-CLOSET	57
X. BEDROOMS	65
XI. A GOOD BEDROOM	71
XII. WARMTH OF THE BEDROOM	78
XIII. BEDROOM FLOORS... ..	90
XIV. THE WALLS OF THE BEDROOM	96
XV. FURNITURE, BEDS, AND BEDDING	107
XVI. BATHS AND BATHROOMS	118
XVII. THE WATER SUPPLY OF THE HOUSE—THE CLOSET FOR THE WATER-TANK	127
XVIII. THE WATER-TANK ITSELF... ..	132
XIX. WELL AND SPRING WATER—PURIFICATION OF WATER, AND WATER SOFTENING	136
XX. THE STAIRCASE LANDING	142

CHAPTER		PAGE
XXI.	THE KITCHEN	147
XXII.	ESSENTIALS FOR THE KITCHEN ...	152
XXIII.	KITCHEN FIRE	158
XXIV.	THE SCULLERY	162
XXV.	THE BASEMENT FLOOR	168
XXVI.	CELLARS AND CELLARAGE	174
XXVII.	LIVING-ROOMS	178
XXVIII.	THE ROOF OF THE HOUSE	184
XXIX.	A SHORT SUMMARY	190





HOUSEHOLD HEALTH.

CHAPTER I.

HABITS OF HEALTH.



HE old saying, "There is no place like home," is a very happy one when it is applied to health and the benefits which spring from health that is good and beautiful. We who are engaged in forwarding this happy work know we may labour our lives out, and still do little service, until we can get each home, however small it may be, included in the plan of our work. The river of national health must rise from the homes of the people and from every home. Then it will become a great river on which every blessing will be borne.

When I, as a physician, enter a house where there is any illness, my first care is to look at the surroundings. What are the customs of the people there? Are they wholesome? Are they unwholesome? If the answer be, "Wholesome and common-sense," then I know that the better half of success in treating the sick is secured. If the answer be "Unwholesome, slovenly, disorderly, careless," then I know that all that may be done for the best will be more than half useless, because there is no habit on which any dependence can be placed, and because habit in the wrong direction is so difficult to move, that the strongest ties of affection itself are no match for it even in times of sickness and danger.

If we could get wives, mothers, and daughters to learn the habit of all that tends to health, we should soon have an easy victory, and doctors would almost cease to be known. Health would be a recognized necessity practised by everybody.

No point in the warfare against disease is so important as that of getting the women of the household to work heart and soul after good health in the household. I am never tired of repeating this fact, and I never shall be until I cease to labour. We always look to women for the cleanliness and tidiness of home. We say a home is miserable if a good wife and mother be not at the head of it to direct the internal arrangements. We speak of slovenly

women twenty times to one more frequently than we do of slovenly men. A slovenly woman is a woman of mark for discredit ; but there can be no doubt that the excellences of tidy women in respect to order and cleanliness have, without any distinct system or mode of scientific education, saved us often from severe and fatal outbreaks of disease. In all the great visitations of sickness which I have witnessed, I have found the women by far the most useful and practical helpmates. The men sat by the fire if they were at home ; the women bestirred themselves. The women saw that the water intended for drinking purposes was boiled and filtered before it was used ; they attended to details relating to ventilation and general cleansing ; they washed the clothing and bedding of the affected persons ; they attended in the sick-rooms ; they prepared the food. In a sentence, they were acting forces for the suppression of the diseases, and their devotion and their readier and superior appreciation of details were the great saving factors in relation both to the prevention of disease and the cure of it.

That which we want, therefore, is for all women, poor and rich, to learn how to keep home healthy. We want them to acquire and to teach to their children habits of health.

In starting this little work I am very anxious to get these notions about habit well fixed in

the minds of my readers. I am told that those readers will be very plain and homely people, and that no hard words or hard sayings must be written for them. Well and good ; it shall be so. But every one, however plain and homely, knows what habit means, and knows the force of habit. Every one knows that when any simple thing in a room or a house has been used, a book, a cup, a bed, a table, a hearth, one of two things may follow : the book may be shut up neatly and put back on its shelf ; the cup may be washed and put into the cupboard ; the bed may be well aired and neatly made ; the table may be cleaned and set tidy ; and the hearth may be swept up and made neat and cheery. Or, the book may be left open at the place where it was being read ; or the cup may be left unwashed as it stood ; or the bed may be left unmade and all in disorder ; or the table may remain with the things on it ; or the hearth may be left with the cinders loose and the ashes all over the place. Everybody knows also that one person will, by habit, always keep these things in nice order, while another will leave them in disorder, and that one is called tidy, the other slovenly.

I want to add to this, that the habit of the tidy person is healthy, while that of the slovenly person is not healthy and never can be. The tidy person does less work than the slovenly, and enjoys a better life. The slovenly person does more work than the tidy, and enjoys life

less. All turns on habit, and all is said in two lines—

Health is tidiness.
Tidiness is habit.

For it is as true as it is simple, that good health is, after all, a matter of habit to an extent which few persons in the slightest degree acknowledge or comprehend.





CHAPTER II.

SUNLIGHT AT HOME.



WHETHER your home be large or small, give it light. There is no house so likely to be unhealthy as a dark and gloomy house. In a dark and gloomy house you can never see the dirt that pollutes it. Dirt accumulates on dirt, and the mind soon learns to apologize for this condition because the gloom conceals it. "It is no credit to be clean in this hole of a place," is soon the sort of idea that the housewife gets into her mind; "The place is always dingy, do what you may," is another similar and common idea; and so, in a dark house, unwholesome things get stowed away and forgotten, and the air becomes impure, and when the air becomes impure, the digestive organs become imperfect in action,

and soon there is some shade of bad health engendered in those persons who live in that dark house. Flowers will not healthily bloom in a dark house, and flowers are, as a rule, good signs. We put the flowers in our windows that they may see the light. Are not our children worth many flowers? They are the choicest of flowers. Then, again, light is necessary in order that the animal spirits may be kept refreshed and invigorated. No one is truly happy who, in waking hours, is in a gloomy house or room. The gloom of the prison has always been considered as a part of the punishment of the prison, and it is so. The mind is sad in a home that is not filled with light, and when the mind is sad, the whole bodily powers soon suffer; the heart beats feebly, the circulation goes slowly, the breathing is imperfect, the blood is impure, and the conditions are laid for many wearisome and unnecessary diseases and sufferings.

Once again, light, sunlight I mean, is of itself useful to health in a direct manner. Sunlight favours growth; sunlight favours the mind; sunlight sustains the healthy state of the blood. Children and older persons living in darkened places become blanched or pale; they have none of the ruddy, healthy bloom of those who live in light. We send a child that has lived in a dark court in London into the sunlight for a few days only, and how marked is the change! We hardly know the face again.

Let us keep, then, this word in our minds, light, light, light; *sunlight* which feeds us with its influence and leaves no poisonous vapours in its train.

When the gardener wishes to make vegetables white he banks them up from the sunlight. The vegetable called celery is banked up from the light in order that it may be rendered white or blanched, and we see how well the experiment proceeds whenever we pass a greengrocer's shop and notice the white sticks of celery lying on the counter. The same thing, precisely, occurs amongst men and women and children. When they are kept from the light in close rooms and alleys they become so pale and miserable-looking that we say of them they want the seaside air, or they ought to be sent into the country. The same thing has been seen, on a large scale, amongst people who live in valleys where the sunlight is cut off to a large extent. These persons become so distinctive or peculiar that they seem to be a distinct variety of the human race. Their eyes are of a pink colour, their faces are pale, their bodies are badly built, and their minds are feeble. These people are called Albinos, from the Latin *albus* (white), just as Britain was called Albion because of its white cliffs; and it takes a long time, some generations in fact, for them to get back to natural health after they have left the state in which they were born and have mixed with healthier people.

Remember, then, the importance of light for

health, and be sure to get plenty of it. There are many good things the poor cannot get, and at one time none but the well-to-do could get even light in their houses without paying for it. But now that the window-tax is gone, the light has come freely to most houses everywhere when people like to let it in. The worst part is that thousands and thousands of persons won't let it in even when it is in abundance before them. They let their window-panes grow dirty ; they cover up broken panes with paper or cloth ; they put heavy and dark curtains at the windows ; they close shutters and doors, and do all they can to keep out this wonderful gift of Nature, as though it were hurtful to them instead of being what it is, one of the greatest blessings. In this way they become what is called too sensitive to light ; light, they say, hurts their eyes, dazzles them, keeps them from sleeping, and all such foolish talk which leads them astray in every direction from good health and a clean and healthy home. I have never known health in a dark house, and when I declare, generally, that *a dark house is a sick house*, I am telling a truth that is as good to remember as it is easy to remember.

In using the word light in what is written above, I mean sunlight. This must be most clearly understood. The lights which we burn in our houses when the sunlight is absent, although very good in their way, are not healthy like sunlight. Gas, oil lamps, paraffin lamps,

and even candles give off bad air, which interferes with breathing, and they should, therefore, be used as little as possible. The best "gas and light company" is the sunlight company, and if we had not got such a company for nothing we should be always crying out for it, and trying to promote it. As it is, we let it blaze away, and invent plans which are not half so good, and cost something all the while they are in use.

Such artificial lights as we must have for temporary purposes ought to be selected with all due regard to health generally, and to the influence of the light on the sight particularly. Coal gas as the source of light is, owing to its convenience, the most popular lighting agent; but the light it gives is not so pure as that derived from mineral oil, while the danger of escape of gas and of impurity of the air from that cause is more frequent and probable. On the whole, the candle is the safest and best mode of artificial lighting. There is little risk from the burning of candles that the air will become readily impure, and there is, practically, no fear that the eyesight will ever be injured. For good light, one good paraffin candle for each person is sufficient. Some persons get into the habit of burning a small light during the whole of the night in their bedroom, and from this cause the "night light" has become quite an institution. In a good-sized bedroom, in which there is no overcrowding, it is not

correct to say that any harm need come from this luxury. At the same time, it should be remembered that the night light is, after all, a luxury, and that its tendency is to keep those who are not perfect sleepers in a state of disturbed repose during the depth of natural darkness.

Before I leave this subject I would say a word about light in relation to the sick-room. A few hundred years ago it became a fashion, for reasons it is very hard to explain, to place sick people in close and darkly curtained bedrooms. The practice is, to some extent, continued to this day. When a person goes to bed from sickness, it is often the custom to pull down the blinds of the windows, to set up dark blinds, or to close the shutters. On body and spirit alike this practice is simply pernicious. It may be well, if light is painful to the eyes of the sick person, to shield the eyes from the light, or even shut the light off them altogether ; but, for the sake of this, to shut it out of the room entirely, to cut off wholesale its precious influence, to make the sick-room a dark place in which all kinds of impurities may be concealed day after day, is an offence against Nature which she ever rebukes in the sternest manner.

This remark presses with special force in cases where catching or contagious diseases are the affections from which these sufferers from sickness are enduring. For contagious diseases, as they live on uncleanness, require for their suppression the broadest light of day.

I once found by experiment that certain poisons, like the poisons which cause these diseases, are rendered harmless by exposure to light.

I had sent me some of the poison from the snake or serpent called the Cobra, a poison which is so fatal that if a person be bitten by the snake he will die in a few hours at longest. The poison proved equally fatal to animals inoculated with it so long as it was kept excluded from the light; but after it had been exposed to the sunlight for a few hours it lost its poisonous power altogether. If it were not for the sunlight, the dirty farmyards and piggeries and stagnant ponds and ditches in country places would be most poisonous. But the purifying sunlight cleanses them.

Thus, in every point of view, light stands forward as the agent of health. In sickness and in health, in infancy, youth, middle age, old age, in all seasons, for the benefit of the mind and for the welfare of the body, sunlight is a bearer and sustainer of health.

To secure the entrance of sunlight, every house should have as plentiful a supply of windows as it can get, and not an opportunity of any kind should be lost to let in light to every room. It is very easy to exclude light when it is too bright; it is very hard to let it in when by bad building it is shut out.

In many residences where there is plenty of window space there is much neglect in keeping

the windows clean. Windows should be cleaned once a week at least ; and it would be a very clever plan to bring into general use a simple mechanical contrivance by which the window-sashes can be easily removed and turned into the room, so as to enable the cleaning to take place without the peculiar process of standing outside on the window-sill. Amongst the poor, who cannot afford to have a window-cleaner, the windows often become quite obscured, because the women of the household cannot get at them, as they say, "on both sides," and the men are not at home in the day to give them assistance. Baker's new ventilating window promises to answer best for the object here stated. The sashes of this window hang on centres instead of sliding up and down. When they are closed, the sashes fit neatly, and exclude draughts and wet effectually ; and when they are opened they can be set at any required angle to admit air. The greatest advantage of all is that each window-sash can be turned over, so that it may be cleaned with equal facility on its inside and outside surfaces without exposing the cleaner to the risk of standing outside at any stage of the cleaning process.

I am quite sure there are great numbers of working men who could, if they would, make their window-sashes work in the way here described. Every carpenter or blacksmith could do it as a matter of course, and so could every ingenious workman who likes to set his hand to the job.

The introduction of daylight reflectors has been, in late years, a very great and useful advance. The dark basements of town houses can be so often completely lighted by these reflectors, that I wonder they are not universally demanded in places where their action is effective. The light they reflect is sunlight, often bright, and always pure.





CHAPTER III.

THE OUTSIDE OR AREA OF THE HOUSE.



MENTIONED the bottom or basement of the house at the close of the last chapter. It is a great pity that human beings are obliged to have any part of their dwellings underground, and it is a still greater pity that people are ever obliged to live there altogether. But such at present, and for a long time to come, must be, and it is, therefore, wise to make the best of what must be.

Man was made originally to live in sunlight, where all is pleasant to every one of the senses, and there is felt, without doubt, a certain kind of gloom, causing a dispirited frame of mind, in living elsewhere. Those who are accustomed to live and work upstairs find it extremely unpleasant to go down to the dulness in which

the servants are obliged to work. The art of living there must be gained by training, and then it is said to become endurable—nay, some say comfortable. But the very circumstance that these objections are felt; the very fact that the comparative stranger in the basement feels it cold, dismal, dreary and unnatural, should lead the conscientious owner and superior to enter the same, and see at regular intervals that the best that can be made out of a bad system is made and kept up, and that all the requisites for securing the very best are faithfully supplied.

The first thing, then, to look after in the lower story, is to secure as much sunlight for it as can be admitted into it. Every window, every available point where a window can be placed, should be found and utilized. The windows of this part should be kept at all times scrupulously clean, and should be encumbered as little as possible by blinds or by curtains. If, from the position of the windows, direct sunlight cannot be admitted, the difficulty should be met, whenever it is possible, by the use of a daylight reflector. When sunlight is freely admitted into every room in the basement story it is astonishing how easy it becomes to effect a number of great improvements which would otherwise be considered impossible.

The next point to be thought of in connection with this part of the house is the cleanliness of the area in front and rear of it.

Too much attention cannot be paid to this matter. It is common for the area to be the place where the dust-bin, the coal-cellar, and the larder are situated. We must, therefore, be very determined to have these parts specially well looked after; for if the dust-bin be neglected, there is a constant source of impurity entering the house; and if the larder be kept unclean, there is a constant source of impurity affecting the food which is used in the house. I do not think it a good practice for a front area to be made a constant scene of traffic in and out of a house. There are advantages certainly in letting people come down the area steps to the lower door. At the same time, I doubt if the advantages counterbalance the disadvantages. When persons are all day traversing the area, when various articles of food and other household requisites are being brought at different and many times of the day into the area, there is very soon left a dirty condition, which it takes a long time to remove. The area steps get loaded with dirt; in wet weather the dirt washes down upon the stones beneath, and in an incredibly short space of time the well—which the area floor really is—becomes a floor of dirt and refuse, that is rarely, if ever, completely cleansed. The houses in which the area is not used contrast, consequently, most favourably with those in which the area gate is at all times open, and through which a great number of persons pass daily. The area left free of

custom and traffic is easily kept very clean ; and if the walls of it be limewashed once or twice a year, it is rendered as healthy as such a place can be.

Floor of Area.

Whether the area belong to a large or a small house, it should be kept at all times as clean as possible ; and that it can be kept perfectly clean by those who like, any one can be convinced by the simple process of looking into different areas in different parts of a great town like London, Manchester, or Liverpool.

You see, sometimes, in the best parts of these places areas so dirty and disorderly as to be a positive disgrace ; you see, sometimes, in the poorest parts areas which are as neat and tidy and clean as could be wished for.

It is all a matter of habit whether an area be clean or dirty ; the cost is not affected ; indeed, a clean area is more likely to cost less than an unclean one ; because it is a rule, which I believe has no exception, that uncleanliness leads to thoughtlessness, thoughtlessness to waste, and waste to loss of money.

The area should be kept quite free of all litters and offensive things. No refuse ought ever to lie on the floor, and no messes ought to be allowed to remain on the floor. The floor ought to be kept as clean as the floor of the kitchen or hall, and once a day it should be swept up and put in good order.

The walls of the area should be kept thoroughly well limewashed. This is a thing which every person can do or have done. There is nothing cheaper than limewashing. There is nothing that purifies so completely, and there is nothing, except it be a reflector, which throws back so much light. The walls should be limewashed twice a year at least, and three times is not too often. The effect of the fresh lime is to remove bad smells, and generally to cleanse the air and make it sweet and wholesome.

The Coal-Cellar.

The cleanliness of the area should extend to the coal-cellar. This may seem a fanciful suggestion, but it is really a sound one.

The coal-cellar is a common place for the accumulation of refuse, and unless a vigilant attention is paid to the coal-cellar, it almost certainly becomes at some time or other a supernumerary dust-bin. Even a coal-cellar calls for an occasional cleansing, and a good coating of limewash on the walls and roof is an excellent sanitary provision; it insures the complete cleansing out of the place, and the removal of accumulated organic refuse, which is sure to be present in the course of two or three years. These same recommendations apply to all other closed places in the area, as well as to any recesses, nooks, arches, or corners which may be present in it.

Flowers in the Basement.

Of late years the art of growing creeping and climbing plants in the front areas of London houses has become somewhat fashionable, and we see even in poor neighbourhoods this plan sometimes carried out. I refer to it because it is on many grounds so very commendable, when it is properly done. It is an excellent recreative industry, filling the minds of those who plant the flowers with pure and healthy thoughts and lessons. It is good artistically, the effect on the eyes of passers-by being itself instructive and pleasant, while the cheeriness of effect on those who live in the basement, and are compelled, where there are no flowers or plants, to contemplate day after day nothing but white walls and dark railings, must be an untold blessing. In place of sameness there is introduced to the eye—in small amount, it is true, yet in amount much better than nothing of the kind—some measure of those changes and variations which Nature in her splendid fertility offers spontaneously to the more fortunate of her children, and out of which variety much relief of mind must needs be found from the killing monotony of viewing one object and one prospect narrowed to the extremest range and ever in sight. Lastly, the plan of cultivating plants, flowering plants—whenever sunlight can be obtained—in the area, is good in a purely sanitary point of view, if

the proper care be taken to look after what is grown, so as not to defeat the objects that are desired, viz. lessons of recreation, beauty, and health. The proper care consists, first, in not overdoing the attempt to do. Whenever trailing plants are cultivated from the area, so that they climb the walls and extend over the windows, excluding the light, then the thing is overdone. Whenever plants which require much water are too abundantly set about, so that water-vapour charges the air and makes the area walls and adjoining rooms damp, too much is done. Whenever plants which require a great deal of soil, so that large barrels or boxes of soil have to be used for them, are introduced too freely, too much is done. Room is in this way unduly taken up; and the soil, from its confinement in a box, gets so wet during wet seasons that it becomes a source of damp and dirt, and is apt to cause the plant itself that is set in it to wither away and die.

For these reasons the number of growing plants placed in the area ought to be limited; nor does the healthy provision in regard to them end entirely with that attention. It must be made a matter of consideration frequently to tend all the plants; to see that they are in good condition of growth; to keep up the supply; to provide that all round about them is clean, and to remove everything that is dead and useless before it can have a chance of becoming decomposed and offensive.

The great obstacle that lies in the way of cultivating flowers in the area, so as to carry out the system I am now advocating, in all its wholesome purity, is the instruction of persons who have the charge of the area, and the tone of their peculiar tastes and dispositions. There are some occupants who, of their own accord, will plant the area and keep it in good taste and condition. There are others with no taste or desire for anything of the sort, and whom it were vain to instruct. We must not, therefore, trust entirely to home work for the carrying out of this object. But in every locality there are florists who might undertake such duty regularly at a small cost if they were fairly patronized, and who, I am sure, for a small rental a year would keep every area beautifully set with the healthiest and most seasonable plants, at all times and seasons. The boon would be incalculable in London, especially in the crowded parts. The plants would purify the air in the worst places, and in winter, spring, summer, and autumn, would bring with them a changing gladness that would fully compensate for the expense and the trouble incident to the improvement.

That it is perfectly practical to introduce plants into the houses of the poorest is proved by what has been done in this way. The labours of the Rev. Harry Parkes and of the Committee of the London Sanitary Association caused, a few years ago, quite a discovery in

this direction of health for the household. A very little encouragement given to the poor to cultivate window-gardening, a very little sum spent as prizes on the poor people who had cultivated best flowers at their windows or in their areas, led to the most useful results. I remember one poor woman who had four children, and whom I visited professionally, showing me with all the pride of a gardener how she had got a perfect little gallery of flowering plants, the names and habits of which she knew much better than I did. I remember, too, her deep regret that her long illness had prevented her trying for a prize; and I also remember with pleasure, how a few words from me—that she had won a prize of great value nevertheless, because she had made her husband, “who was very fond of looking at flowers,” cheery, and her children cheery and healthy—made her look contented and happy. Indeed, I believe those few words were as useful as my medical prescription, so much does a happy mind contribute to a healthy body.





CHAPTER IV.

DUST-BINS.



IN London the dust-bin system is one of the worst and most unnecessary of insanitary grievances—in winter unpardonable, in summer intolerable and detestable. In the hot weather the odour of the dust-bin is all but universal in our modern Babylon. We enter the best houses in the best localities to become conscious of it. When we advance to it, the sense of smell is oppressed until the stomach also learns the story. The sense of sight gathers up the same. Wherever, in wild deserts, carrion is outlaid, there also will be animals of prey; and in occupied towns and cities where carrion is laid, there also will be animals of prey; not, truly, in the shape of birds, but in the shape

of those little winged, ravenous insects which we call flies, which haunt the dust-bin in hosts, and by their presence indicate the putrescence that is near. Bring near to such a place an ounce or so of strong hydrochloric acid on an open dish, and the dense white fumes of chloride of ammonium which will arise will testify clearly enough to the decomposition that is in progress at the very doors of the habitation. Into the dust-bin there is too frequently thrown everything that can give rise to foul smell and bad air; every kind of useless organic substance the house can throw out—parings of potatoes, leaves of cabbages, remnants of salads, faded bouquets and other dead flowers, dust from the house, and portions of rags or shoes, together with the only substances which ought under any circumstances to be there, and which alone are innocuous, the cinders and ashes from the stoves and grates. The gases which pass off from the dust-bin under these conditions are all injurious to health. There is carbonic acid; there is sulphuretted hydrogen; there is vapour of water charged with these gases; lastly, there is a series of ammonias, all of which are not merely objectionable to the sense of smell, but injurious to the health of those who inhale them.

The dust-bin nuisance and danger ought to be met in all towns by the local authority, which should provide that every morning, before the streets are occupied by passengers,

the dust and refuse of every house should be removed. In some towns this is done. In Scotland, in some places, the very practical system of putting all the refuse of the house in a closed pail or pan outside the house, and the collection of it each morning in a dust-cart while the streets are empty, serves a doubly useful purpose. It keeps the houses free of the accumulation of dust and dirt, and it prevents poisonously large dust-vans like those of London from going in the daytime from house to house on the business of collecting and concentrating the emanations from the refuse of all the houses into the air of the whole of the street, and, out of a series of local nuisances, generating a wholesale nuisance.

Until such time arrives as shall see the local authorities everywhere carrying out the sensible plan that has been recorded above for removal of the refuse of the house, it is essential in places where the dust-bin has to be retained to be careful in using it, so that it shall do as little evil as possible. In the exercise of this care it is essential not to have put into the bin anything that decomposes, unless the substance can be completely and fairly buried in the ashes that are thrown in with it. All combustible substances—and these include pretty well everything that is organic and putrescible—should be burned in the kitchen fire day by day, burned as they are made ready to throw away, so as not at any time to accumu-

late into a heap or a store. Cabbage-leaves, potato-parings, remnants of fruit, remnants of flowers, and all such commodities, should be in this manner immediately destroyed. Bones, if they be put into the bin, should be well buried in ashes, and care should be taken at all times to have a good and even layer of ashes over the whole of the contents of the bin, whatever they may be. The bin, under all circumstances, should be cleansed out once a week, and a good watch should be kept that it is cleansed to the very bottom. Unless it be cleansed so that the stone at the bottom be clean, a dense mass of putrescible matter, mixed with damp ashes and dust, is sure to gather on the floor, and become a kind of second floor of decomposing material, which will keep the bin a nuisance, however frequently it may be emptied.

The dust-bin, as it is commonly constructed, is very indifferently arranged. It is made usually of wood, which soon gets saturated with organic fluid, and so is rendered offensive. The lid is too often left open, or when closed is but an imperfect covering. At the lower part of the bin, in front, is a sliding door, which lifts up that the bin may be emptied of its contents, and which should fit closely down when the emptying is finished; but which, in nine cases out of ten, does not fit closely by any means, and lets some of the contents of the interior fall out upon the pavement of the area.

To remedy as far as possible these evils

connected with the dust-bin, I invented a few years since a new kind of bin which answers uncommonly well, and which I would strongly recommend. It was made for me originally, and fitted by Messrs. Ewart and Son of the Zinc Works, Euston Road, from a model which I constructed for them to copy. This bin, instead of being one large fixed box, is composed of a set of iron boxes of small size, which stand side by side in a recess in the area, and are all covered by one frame, to which is attached as many lids as there are boxes. The boxes in my area were five in number, each about eighteen inches high and fifteen square; they stood on a small platform of wood raised three inches from the ground, and they were separated by a three-inch bar of three-quarter-inch wood, screwed vertically to the platform. The little bins had each a strong iron drop-handle before and behind. When they were all placed in their proper places they stood in a row against the wall, and were level in height throughout. To a bar in the wall just above them a frame was attached which dropped over all the bins at once, covering them all in, but in the frame there were five zinc doors or flaps, one over each bin, in order that one bin might be open while the others were closed, and each one be, in short, separate from the rest.

The mode of use of such dust-bins is as follows:—All the bins being empty, and all the lids down, the refuse of the house is cast into

the bin farthest from the house until that is rather more than half full ; the lid of this bin is then closed down, and the refuse is cast into bin number two, until that is charged in the same degree, and so on with the rest. Having five bins, it does not often happen that all the bins are fully charged at the same time, but if they are, they are closed in sections, and one section being open does not expose the whole surface to the air. When the dustmen come, they have no occasion to bring baskets or to make any dust at all in the area. They have merely to lift up and throw back the frame containing all the lids, when the bins stand before them ready for removal. Each bin is carried up the steps, with the dust in it, to be emptied into the cart, and when all are in this way emptied they are brushed out and replaced. The frame is then let down, the five doors are closed down, and the arrangements are made for a new start. By this means the dust is always removed effectually ; nothing remains concealed to infect the air ; and, best of all, no bad odour is diffused through the house by the process of emptying the contents of the bin into baskets in the area.

The above was a very elaborate dust-bin, and rather too expensive, I thought, for general use ; I therefore had bins made at a cheaper rate. They were in metal, and were of a round shape with an easily movable lid. These are common at the present time in the ironmongers' shops,

and are getting into favour with all classes of people.

But even this cheaper form of dust-bin is more expensive than is necessary for a workman who has a good pair of hands to make a bin for himself. He has no more to do than to purchase a fruit or butter barrel, which can be got for a few pence, affix to it a cord or metal hoop to serve as a handle, make the lid fit neatly, and give the bin inside and outside one good coating of coal tar. This bin, when the tar coating has become hard, is just as good as any other, and is within the reach of every person who has a house, however small and modest it may be.





CHAPTER V.

THE LARDER.



PEOPLE of all classes cry out at once if they think there is any danger of running short of food, but it is strange how few ever trouble themselves for a moment to inquire into the condition in which the food they are about to eat is lodged and cared for. When that food has passed their mouths, when it has been distributed all over their bodies, when it has become bone of their bone and flesh of their flesh, then they may have to take some trouble about it, more trouble, perhaps, than they know of, or ought to take, in certain ways. But while it lies in the safe, or cupboard, or larder, waiting to be eaten, it might too often be the dust in the dust-bin for the care that is taken of it. Even wives and mothers, who should take an unceasing interest in this

matter, though less negligent than men, are not always too careful.

A general negligence is, in fact, felt in respect to this subject amongst the richer classes ; while servants, who are often not half so bad as they are represented to be, but who are, by necessity, ignorant on many questions now under consideration, are left far too much in authority in respect to the storage of food. It is very important, therefore, to dwell with some care on this homely but vital question.

The food of the house should properly be kept out of the house itself, and in an open or cool place ; and as the area is, as a rule, the only safe open place, it is usual that the food is put there, and kept there, until it is wanted. For this reason, however, it is the more essential that the area, of all places in the house, should be open, light, clean, and wholesome ; that its walls should be thoroughly well limewashed at least twice in the year, namely, at spring and fall time ; that its floor, which is usually of stone, should be so laid that water will never accumulate upon it ; and that the floor should at all times be kept free of the rubbish and refuse of the household, and as clean as the floor of the kitchen itself. In this store-place for the food there should be no open drain from the sewer, no drain partly closed, no drain in the least choked with its own contents. It is, however, too true that the drainage here is about the worst in the house. The larder may be in an

actual open receptacle for the sinks from two or three parts of the house—the scullery, the kitchen, the pantry. The water and other slops from some of these offices are often allowed to run over the floor of the place, and imperfectly to flow away by the grating of a drain in the centre, or in a corner, into the drain below, by which unwholesome processes the place is kept in a state of perpetual damp in wet weather, and in a state of foul vapour when the heat of the day is sufficient to vaporize the fluids that are cast out of the house. It is little wonder that in an atmosphere such as this the meats and foods in the safe, and the vegetables that have been cooked, should soon become mouldy and tasteless and unfit for human food, until their outer surfaces are pared away and great waste produced. It is little wonder that in such atmospheres there should be rapid decomposition of food when the weather is close and damp.

The drains from the house near the safe or larder should, therefore, be well trapped and well enclosed, so that the fluids they convey away may escape from the house without giving off vapours that may come into contact with the food. Besides taking care that the walls and space containing the larder are kept scrupulously clean, and that the drainage is perfect, it is necessary to keep a sharp look-out that the space does not become a receptacle for the refuse from the kitchen. The temptation is very great to make it such a receptacle. It

is close at hand ; the bad odour of things in the kitchen, or other lower room, which is insupportable in those confined spaces, is tolerable in the open space ; and, thereupon, the odorous things "are put out to sweeten the house."

In such places at the back or front of a house, we may often find in proximity with the foods on which the family subsist—many of those foods being already cooked and set aside, such as cold meat, custard, opened pie, cheese, and other articles—a box filled with bones already sour and on their way to rapid decomposition ; pots of fat, stew-pans set out to be cleaned ; disused flower-pots filled with damp mould and holding the rotting stems of flowers ; and, to complete the whole, across a clothes-line a few clothes that have just gone through a "dab wash," hanging out to dry. These are the kinds of impurities from which the open-air food-space requires to be cleansed, and from which it should, at all times and seasons, be kept entirely free.

The space purified and made ready to receive it, the larder, or safe, that is used for holding the food, has to be considered. No one, as far as I know, has up to this time invented or constructed a good and convenient larder that can be set up in every house, at a cost that would bring it within the reach of the poor ; but the arrangements for such a necessary article of domestic utility would be extremely simple. The safe should be placed across the area at

one end, so that three sides of it are included in the walls of the building. It should be about seven feet high and thirty inches wide, and it should have a sharp-set, sound roof of metal, composed of two layers either of zinc or of galvanized iron, between which should lie a three-inch layer of felt, to cause an equal temperature. Three feet from the roof, on the inside, there should stretch across a clean slab, above which should be a series of shelves reaching about half-way across and separated about a foot from each other. The slab will thus divide the larder into two parts, which should be closed by two iron or zinc doors, perforated so as to admit air freely. Beneath the slab should be three sliding ten-inch drawers, which may be of glazed iron internally cased with felt and wood. Beneath them should be a large recess, which may be divided vertically into two equal parts, so as to form a couple of large shelved cupboards, closed with perforated doors, the bottom line of which should be about eight inches from the ground. The walls of the safe should be glazed or well whitened on the inside.

A larder constructed in this manner would be easily kept at the same temperature in winter and in summer, and in it food would be well and freshly and wholesomely preserved. I wish I could inform my readers where such a larder for their provisions could be obtained cheaply, ready made. But, at any rate, I have

shown how they may direct the construction of such a larder, and I feel sure that amongst intelligent working people there are very few who could not make one for themselves.

The safe, or larder, as we now have it, is usually made of wood, with the panels of the doors perforated with a few holes, or filled with perforated zinc. It is best, in modifying the present plan, to remove as much of the wood-work as possible, and to make the walls of stone or brick rather than of wood, except in the front. These walls can then be frequently limewashed. The shelves should be frequently cleansed.

It is good practice, whenever the air of the larder is close and tainted, to have it fumigated by an agent which answers singularly well. This agent is sulphurous acid—one of the best of its class for destroying decomposing organic substances. It may be made by simply burning a stick of common sulphur in the larder, and letting the fumes disperse until the air is so distinctly charged with them that it is oppressive to breathe it. After this the doors should be left open for the free admission of fresh air. But, without all this trouble, much can in most cases be done by simply emptying the larder or safe of all it contains, whitewashing the walls, cleansing the shelves, and letting the whole get well dry in the open air.



CHAPTER VI.

THE DRAINS.



FROM the area we obtain the best information of the position of the drains running from the house, and the first thought of all that occurs to the sanitary inquirer is as to their state and effectiveness.

Good drainage is the basis of domestic sanitation or health in the house.

Let the drains of a house be bad in their construction—I mean bad in respect to the material of which they are made; let the laying down of the drains be in such a manner that there is no sufficient flow into the main sewer or other outlet; let the outfall of the soil-pipe or pipes, or other pipes leading from the house into the main drain of the house, be bad and defective; let the trapping be indifferent;

let there be stoppage anywhere, so that the gases of decomposition from the substance which is held in the main drain, or in the smaller drains which enter it, cannot find free escape out of the house ; let anything lead to this arrest in the escape of poisonous drain gases, and all else in the way of management of the house is rendered largely worthless. In a house well and completely drained, a very sloven of a housekeeper may hold on for years, and meet with so little disease in it as to lead her to suppose that her very slovenliness is the reason of good health. Let the drains be faulty, and the best and cleanest of housewives may labour in vain ; she may practise the most perfect order and cleanliness, and still be so terribly tripped up by the development in her beautiful house of one of the contagious diseases, as to feel inclined to throw sanitary science aside altogether as a fiction, a delusion, and a snare.

We sanitary reformers know these facts too well. We have learned them from a long and a bitter experience. The ignorant have thrown the results of them in our teeth day after day. "See," they have said, "here is a specimen of your fine doctrines. There is a man we know of who has wealth and a horror of fever. He built himself a house, and fitted it with every fad that could be suggested, and he had not been in the new place six months before two or three of his family were ill with fever. On the other hand, there was a filthy old woman in a

cottage hard by, who had neither drain nor closet in her house anywhere, who scorned ventilation, and looked upon sanitary inspectors as lunatics whom their friends send forth to do mischief everywhere except at home, and she had no fever, and never has had, although a large family and many lodgers have occupied her dwelling for years past."

The argument, though it is false—and it is false from beginning to end—is not without its value. It puts us more on our guard, and it makes us feel the necessity of being with the public concerning health. We are bound to explain that where a house is removed from the dangers of bad drains, it is so much safer from the risks of fever and other great plagues than less fortunate houses are, and that it can afford to bear a great deal more of other internal uncleanliness than houses which are cursed with indifferent drainage, but are otherwise perfect in their other arrangements. Why this is not thoroughly understood is due to the circumstance that the dangers of drainage are not visible to the eye. Because the contents which are carried away by the drains are impure and repulsive to the sight, they are hidden from the sight. But if, by some magic spell, all the drain-tubes and pipes in a large city could be changed from tubes of metal into tubes of glass, so that in every house the sights they cover could be seen, the wonder of the simplest-minded would be, not that we had disease in our houses, but that

at any moment we were free from the self-inflicted curse of diseases of the most fatal nature, in their worst and most fatal types and consequences.

From the closet in the highest part of the house, through the whole of the soil-pipe into the chief drain; from the pipe of every sink into the main drain; from the main drain at its commencement, through all its courses to the outlet trap; from the earth all around the main drainage-pipe; from the exit of the main drainage-pipe in the trap to the termination of the trap itself in the sewer or cesspool; in all these parts there would often be seen such a line of decomposing disease-producing material as would make every one, I think, at once declare that the danger is very great indeed.





CHAPTER VII.

SOME PROOFS OF BAD DRAINS.



IN a large and well-built house in the West-End district of London, the main drain of which was exposed in order that a new drain might be laid down, the stoppage of water from the house being inconveniently frequent, the workmen, acting under my instructions, found, on opening the old main drain, a square drain-shaft eighteen inches deep and fifteen wide, so charged with sewage matter, most of it half solid, that fifty barrow-loads had to be conveyed away. The drain of this house extended from the back kitchen in the rear, along and beneath the floor of another large kitchen, and along and beneath the floor of a passage leading to the front area door, a length of over fifty feet, and in this entire length

it was charged with sewage. It was, in fact, a vast sewer under the house, into which the various pipes from the house emptied. What housewife could keep that house free of disease? It was a house almost as dangerously undermined as it would have been if gunpowder had filled the place occupied by the sewage.

In two other houses in the same district a somewhat similar condition came under my observation. In one of these dwellings, which had been newly drained at great cost, and which was considered to be completely drained; the soil-pipe which ran through the house behind an angle in the wall was a persistent source of sewer smell. After a time an inquiry was made, and then it was discovered that the drains of this house and of its neighbour, which had also been redrained, had no connection with the main sewer at all, but that both poured their sewerage into a large vaulted space, which once had been a large drain leading either into a disused sewer or into an old cesspool. Thus the owners of these two houses, although they had paid their rates for the great sewage system of London, though they had continued to pay sewer rates, and had both of them drained in a scientific, modern way, as they supposed, into the grand outlet from their houses, were really draining into a foul cesspool, strongly charged with putrid air which, in spite of the trap, could not fail to escape back into the house at almost all times and seasons.

Among many other instances of this kind, let me give one more, because of its extreme character. I was summoned, professionally, by his medical adviser, to visit a gentleman living in a fine large house in one of the most open and beautiful parts of the north-western districts of the metropolis. The gentleman was reported to me as suffering from gastric fever. I, being a minute or two before my time at the visit, was shown into one of the drawing-rooms, in the air of which I detected at once the sewer odour. I picked up a cushion from the ottoman on which I sat; the cushion was saturated, I might say, with the same odour. When my professional brother arrived, I referred at once to the condition of things, on which he told me that the whole house was in the same plight, and that one of the female servants at the lower part of the house was suffering from the same disease as the patient upstairs. The house was, indeed, charged with sewer-gas, and I lost no time in recommending that the risk of removing both the sick persons should be carried out without a moment's delay, a proceeding which led to a successful result. When they were removed, the house was cleared of all its occupants, and air was admitted by every window. Then the work of inquiry as to cause was commenced, and ended in the discovery that the very soil-pipe had been transformed into a sewer, that the connection between the drain from the house

to the main sewer had never been completed, that the trap was closed up, and that the soil-pipe itself was charged with sewage along the greater part of its extent, so that the water from the closets escaped with the utmost difficulty.

Some one will say that these are selected illustrations of domestic uncleanness. I wish, indeed, that I could say they were. I cannot give notice of such good news. On the contrary, from the evidence which was collected a few years ago at the Society of Arts, at the instance of that veteran of sanitary science, Mr. Edwin Chadwick, it would appear to be too true that hundreds of houses in London are in nearly as bad a condition, great numbers quite as bad. The best engineers, including men like Mr. Rogers Field, Mr. Eassie, and Mr. Griffiths, and others, gave in the most convincing manner, and from their practical knowledge, such evidence of the dangers that still beset the town house, that the mind is bewildered with the thought of the immunity from disease that generally prevails. To state that there are not five hundred houses in the great metropolis of Great Britain properly drained, or safely drained, would probably be to state what is under the actual fact. The sewers are there, and so are the houses; but the houses wait for the service they ought to get from the sewers, while the sewers themselves, constructed on a wrong principle, are, as

Mr. Chadwick expresses the facts, sewers of sewage deposit.

This is not the place to write on the grand question of the removal of sewage from great towns. I am bent on indicating how the house, and nothing more, is to be purified of sewage by means of good drains. An engineering feat has been so far advanced, at all events, that in our large centres of life some kind of general arrangement has been made by which the sewage that has been formed may be sent away. The receptacle may be a large main sewer; it may be a cesspool; but it is in existence outside the dwelling, and the point the housekeeper has to settle is how he can empty into that common centre, and have his house behind it free of bad smells and bad air. Happily, this can be accomplished, and I will now proceed to explain the easiest way towards the accomplishment.





CHAPTER VIII.

GOOD DRAINS.



O get safe drainage it is necessary in every house, small or large, to have in the basement-floor one thorough good drain which shall pass from the back of the house to the front, and shall be certain to enter the sewer with a good and efficient fall throughout its entire course.

The drain so laid should never be excessively large, for if it be too large it is irregularly flushed, and often becomes itself a receptacle or sewer.

For a house that will hold a large family, say of twenty persons, a six-inch pipe is amply sufficient. Some would tell us—and I think Mr. Chadwick would—that a four-inch pipe is as large as is needed for such a house, and certainly for all houses less than this a four-

inch pipe is quite sufficient. The pipe throughout should be so well laid that between the joints there is no leakage. This is one of the most difficult details to overcome, but it can be overcome by care in the laying, and by embedding the joints of the drain thoroughly in cement. To test whether the drain, after it is laid, is true and safe, it is requisite to close up all the outlets in it except the one at the highest point, and then to determine whether from the highest point of it it can be filled with water, and if, being filled, it will remain full. That settled, the drain may be considered sound. How many of such drains exist it would not be difficult to guess, they are so few, for it requires much skill to lay them with sufficient accuracy to secure what is desired. The difficulty is, however, now, I hope, nearly overcome, for I have seen two specimens of drain-tubes newly invented, which promise to make it so easy a task to lay their joints evenly, that the most commonplace workmen may carry out the work.

The tubes must not only be laid so as to be water-tight, they must be laid in such a manner as to be very even on their inner surface. If they present projections from the inside, those projections become so many points of obstruction, and at them the drain is apt to block. A centre is then laid for the stoppage of the solid material, and that once laid, is sure to increase rapidly and become a firm obstruction.

It has been a subject of dispute of late years of what the surface of the interior of the house-drain should be composed. It is customary to use the glazed pipe, composed of earthenware, and it would seem at first sight that nothing could be better for what is wanted than the smooth earthenware tube. In practice, it is, nevertheless, found that the glazed surface is not altogether desirable. One of the chief obstructing agents in the house-drain is the fat which, from the fluid state—dissolved in the hot water in which dishes are washed—cools on entering the drain, and becoming solid as it passes along, adheres to the side of the tube, and by accumulating, closes it much, if not altogether. On the glazed surface the fat gathers more closely than on any other; it becomes, as it were, a part of the surface itself, and, like two pieces of glass, which, tightly pressed together are as one, it and the surface on which it lies are like one. There is nothing to separate them, and one layer of fat once laid down, becomes a foundation for any number that follow, until the diameter of the tube is, in the most scientific way, reduced to the smallest dimensions. A somewhat rougher tube is, therefore, more desirable, and a tube of a structure like cement, with a joint that locks in a very ingenious manner, is now becoming a favourite tube for the house-drain. The safest, and up to this time the best tube, is one of glazed iron, laid in long lengths, and with the joints completely closed

and sealed. To this the expense is the one serious objection.

The main tube laid and tested, and a free communication established between it and the sewer, the other tubes from all parts of the house, from the soil-pipes, sinks, and subsidiary drains, should be brought into the main, the utmost care being taken that the connections between them and the main are secure. In carrying down the smaller pipes, it should be a matter of caution to avoid all sharp angles. Where an angle has to be turned, it should be turned with a good round corner, and with as full a fall, direct from the angle, as can be secured; then there is less chance of lodgment of solid substance at the angle.

Of the pipes that are laid to enter the principal house-drain, the soil-pipe is the most important. It is requisite, it is even urgent, that this pipe should, whenever it is in any way possible, be carried down on the outside of the house. I know this is not always possible in houses which have been built long ago, and I regret to observe that it is not always carried out in houses that have been built in the present day; but this does not alter the advisability. If the soil-pipe must be inside the house, it should be fixed with special care that the joints be closed—should there be joints—and the joints should be as few as can be. I do not agree with the view that the soil-pipe should be embedded in the wall, and so be made inacces-

sible. On the contrary, it ought, in my opinion, to be perfectly accessible at every point of its course, and only kept out of sight by a movable wooden or metal panel.

All the small drains having been brought into communication with the chief drain of the house, and all closely sealed into it, the chief drain has to be trapped outside the dwelling, a little way before it reaches the common sewer. By this means it is to a large extent cut off from the sewer; but not entirely, for no trap has been invented which absolutely shuts off the sewer air. As a consequence, it is necessary that the main drain should be provided with a safety-escape arrangement; in other words, it has to be ventilated in such a way that if any gas shall rise from retained decomposing matter, or shall return from the sewer, it shall not enter the house to pollute it, but shall find its way into the open air by a pipe which ascends to a level with the ridge tile of the dwelling, and be discharged into the air.





CHAPTER IX.

THE WATER-CLOSET.



IN the houses of crowded cities one of the worst sanitary difficulties lies in the arrangement of the water-closet.

The water-closet may be taken as the good or bad test of good or bad housewifery. When a doctor goes into a sick-house, if he finds the water-closet perfectly clean, orderly, and free of bad odour, he takes the fact as very good evidence that the superintendent of the house over domestic things is clean and orderly, and one who can be depended on. If, on the other hand, the water-closet is found in a litter, the floor dirty, and covered with scraps and tearings of paper, the walls unclean, the seat only half clean, the pan unclean, the pan destitute of water, the water in the cistern deficient, utensils

and towels improperly left, the window or ventilator closed, and the atmosphere of the place bad, then the doctor knows that, beyond the disease he has to treat, he has uncleanness and the disorder of the house also to meet and treat. He has a double difficulty on his hands, and a double danger.

It cannot be denied that great difficulty attends the water-closet in many houses. The closet itself is often placed so as to be in the centre of the living or sleeping part of the house. The flow from it is often exceedingly bad ; the leverage and the water supply are apt to get out of order ; the pan becomes unclean, and, whatever care the housekeeper may exercise, there is an odour from the closet which pervades the floor of the house in which the closet is placed and declares the unwholesomeness of the arrangement.

To meet these unfortunate conditions, a first care should be to secure free course from the pan of the closet into the soil-pipe, and then from the soil-pipe into the sewer in such a manner that at some point, before it reaches the trap leading to the sewer, the pipe shall be open to the air. A second care is to secure a good and steady supply of water, so that the pan of the closet can always be thoroughly flushed and charged with water. A third care is to have everything so arranged that the water may completely empty the pan, and afterwards leave a good supply of water in the pan. Underhay's plan

is one of the best for securing this advantage ; it gives a free fall of water when the trap is raised, and the trap fills, if it may so be said, as it empties, thereby rendering the return of air from the soil-pipe all but impossible.

These plans secured, the next step consists in arranging for the purification of the closet itself ; for the free ventilation of it specially.

When there is a ready means of making a window or direct opening from the closet into the open air, the difficulty of finding an escape of air is fairly solved, and I need only to say of such an opening that it can hardly be too large or too free. The great obstacles are found when the closet is in the centre of a floor, and when there is no means of direct communication with out-door air. In many of our London houses it is actually not uncommon to see a window from the water-closet opening into the staircase, a plan as bad as can possibly be imagined. To avoid that, I would suggest the following arrangement, which I have carried out with very satisfactory results.

To ventilate freely under the plan to be named, it is requisite to make an opening through the ceiling of the closet, and to secure an outlet, so as to allow the air of the closet to find free exit. This is best done when the closet is under the roof of the house by carrying a three or four-inch tube into the space under the roof, and either running it from there into a chimney shaft, or direct out on to the

roof by a chimney of its own. In cases where there is an intervening floor, it is necessary to carry the opening through the ceiling of the closet into the space between the ceiling and the floor above, and from that, by a tube laid between the floor and ceiling, to the side wall, and through that wall into the open air by an exit shaft. Or else to carry a tube through the ceiling and floor direct up to and through the roof, or into a chimney shaft. If gas be at hand, it is well to have a burner put into the closet, and to allow the jet to be suspended immediately beneath the ascending exit air-tube. By this method the escape of air from the closet is always well secured, and part of the difficulty is overcome.

Following, however, upon this, it is necessary to let air freely into the closet, so that there may always be a free current of air circulating through it. To effect this object, one step more must be taken. Through the floor of the closet in front of the seat, at either or at both ends, there must be cut a free opening into the space between the floor and the ceiling of the room below. From this opening another free communication must be made with the outer air by an opening through the wall of the house. It may be necessary here to carry a tube from the opening in the outer wall to the closet, but, as a rule, it is only requisite to insert a few perforated bricks in the wall on the level of the space between the floors and the ceiling of

the room beneath. This space then becomes an air-chamber, which feeds the closet with air in the freest manner. The air introduced should pass also freely under the seat of the closet.

By the simple plans now detailed, I have seen a closet in the centre of a flat rendered free of all odour, and so flushed with air that it was purer than some closets which are placed out of doors.

The walls of the water-closet should either be painted so that they may be washed frequently, or they should be coated with distemper often renewed. All porous coverings for the walls are particularly objectionable.

On the whole, I believe that no covering for the walls of the water-closet is better than distemper or simple limewash. This can be put on frequently by any one who has the least will for being clean ; and the very act of putting it on makes a good cleansing, as all other parts as well as the wall have afterwards to be washed or scoured, and the large quantity of water used is poured down the closet and flushes the pipe. But if paper be put on the walls, then the paper chosen for the purpose should always be what is called washable paper, that is, the strong, glazed paper which will allow soap and water to be applied to it three or four times before it is destroyed or stripped from the wall. These washable papers are now made in a cheap form, and they answer often for three or four years.

At first, they clean well for several months by being simply rubbed down with a dry cloth from time to time. Then they may, when necessary, be cleaned with soap and water, and some of them are so strong that they may even be scoured with a moderately hard brush. They should, however, never be washed what may be called threadbare, and when new paper is being put on, the old should always be taken off.

To hang paper when the design is complicate is an art that requires a great deal of practice if the work is to be done well. But there is no careful housewife who cannot learn to hang paper of a plain and simple pattern, and every housewife who looks after her household ought to learn to do so much. It is not a labour when it is done in a pleasant tone of mind, but really a nice change of work, and it is most useful in the house. I have seen some "papering" done by a labourer's wife which would match the work of a regular paperhanger, and it is astonishing how bright and cheerful that woman made her cottage by this little skill on her part. Every woman cannot at once do this, but every one can commence, with paper of a simple pattern, on a wall of small size. Then she will soon learn to do more, and may in time even venture on the walls of the sitting-room, and make them quite ornamental by her skill. Those who see what she has done will be sure to admire her work if it succeeds, and she herself will at all times

have the comfort she has produced before her eyes. Her children, if she have any, will be equally pleased and, proud of their mother's cleverness, will follow her example when they grow up, and, it may be, improve upon it, for good examples and good work continue to travel, as light travels from one torch to another, when it is steadily carried and applied.

The closet should be frequently cleansed throughout, and once in three years, at least, the pan should be taken out, and it and all the parts and tubes beneath should be cleansed and purified. Once every week the closet should be thoroughly flushed with water; and through the seat, over the handle of the lever that lifts the plug to let in the water, an opening should be cut so that the handle can be raised, during the flushing, while the lid of the closet is closed down.

The habit of leaving the closet quite clean and proper should be taught to every one in the house, and to children from their early life. It is quite easy to carry out this habit of cleanliness, and it is a most important habit. Every time after the closet has been used, the water should be allowed to flow freely through until the pan is left without a trace of anything but clear water, and some water should, of course, be left in the pan. If this is done, a closet is really kept clean by every person who goes to it, and a world of trouble is saved. The floor should also be kept very clean and free from

litter. If the floor be made of wood, it is good to have it covered with a piece of oilcloth, because that absorbs less than the wood, is easily washed, and can be removed and replaced without trouble and at little expense.

In very cleanly families there is kept in the water-closet a basin for clean water and a clean towel, so as to enable those who have used the closet to wash their hands before they leave it. This is a really excellent custom, and when a person is used to this practice, it is quite strange and uncomfortable to omit it. Some diseases, like cholera and typhoid fever, may, as it would seem, be readily conveyed, in times of disease, by what is carried away even in minutest quantity from the closet. To wash the hands, therefore, must be a great safeguard against such diseases, but, even apart from this, the custom is good, because it is so wholesome.

Many people try to keep the water-closet sweet by fumigating it, burning pastilles in it and such like. These are, as a rule, bad plans. They are like the plan of locking the stable door when the horse has been stolen. The one great and simple method is to keep every part perfectly clean always, to let in fresh air always, to let out bad air always, and always by these sure and certain proceedings to prevent the necessity for anything else in the way of purification.



CHAPTER X.

BEDROOMS.



PERHAPS some one will say, Why, in speaking of home and fireside topics, should you go so soon to the bedrooms? There is the drawing-room or parlour, surely, first to be thought of; that room in which the company gathers when company comes; that room in which the mistress of the house takes the most pride, shows the most taste, feels the most at home. There is also the dining-room, sitting-room, breakfast-room, or study. Again, there is the kitchen—of all rooms, surely, the most important in every sanitary point of view? We will enter all these rooms in good time; but let us go into the bedrooms first, and get them in order, because, after all, they are really the most important

rooms in the house, by far and far again. I know they are not commonly thought to be so. I am quite aware that this is one of the least popular notions about bedrooms. I often think, as I wend my way up ever so many different kinds of stairs daily, that a doctor's usual journey would be something like that on a tread-wheel, were it not for the fact that there is always some new ending to his ascents, and that on his mission of usefulness he is often carrying the blessings of science into the sanctuaries of sorrow. But one fact would lighten my heart very much more; I mean the fact—if it were as fully as it were easily realizable—that I should always, in sickness or in health, find the bedrooms befitting their office and the purpose to which they are assigned.

The reason why I am so emphatic in respect to bedrooms, and in giving them an early place in domestic sanitation, is obvious enough, if but a few moments' consideration be given to the importance of the bedroom as a centre of the household. In this room, if a due proportion of sleep be taken, the third part of all the life is passed—thirty years out of a life that reaches to an age of ninety. In what other room in the house is so much of the life passed without change? In the sitting-room we move about, we have the doors frequently open, and in numerous ways we change its air, and change our own relations to it. In the bedroom we are shut up closely, we are unconscious of what

is going on silently around us. If the air becomes close we do not notice it, and it may become positively poisonous without our knowledge. Moreover, during sleep, we are most susceptible to influences which act detrimentally upon us. We are breathing slowly, and we are not casting off or eliminating freely the products of animal combustion thrown out by the lungs and skin.

As a rule, I regret to record that from want of appreciation of what is most healthy, in opposition to a keen appreciation of what is most fashionable, the bedroom is too often the part of the house that is least considered. It may be in any part of the house. There is no room too much out of the way or too little cared for that may not be a bedroom. "This is only a bedroom," is the commonest observation of the woman who is deputed to show you over an empty house that stands to be let. "We can turn the dressing-room into a bedroom whenever we like," is not unfrequently a housewife's, and even a good housewife's, expression. "Give me a shake-down somewhere," is the request of the unexpected traveller or visitor who wants to stay with you all night. "Anywhere will do so long as there is a bed." "This is only an attic; but it is large enough for one servant, you know, and two have slept in it many a time before now." These are the kind of ordinary terms that are applied to bedrooms as apologies for something that is confessedly

but observedly wrong about them. The language itself implies error; but it is far from expressing the whole of the error that really exists.

When we enter the bedroom we too often find it, though it may be a good-sized room, altogether unsuited as a sleeping apartment. It may be situated either at the back or the front of the house; it may or may not have a fireplace, and, if it should have a fireplace, the register may or may not be open. The windows may be large or small, according to mere caprice of the builder, or of accident, or of necessity; and whether the window will open or shut from the top or the bottom sash, or from both, is a matter of smallest consequence. As a rule, the bedroom windows have a double sash open only from the bottom, and it is the most usual occurrence to find the sash-lines out of gear altogether, or the frames in a bad state, so that the sash has to be supported with care, or "humoured," whenever it has to be opened or closed. Then to the window, that the room may look snug and comfortable, must be muslin blinds (half blinds), roller blinds, and very often heavy curtains. When the window is opened the roller blind blows out like the sail of a boat, or blows in, at the risk of knocking down the looking-glass. Sometimes venetian blinds, which are never in order for two months together, take the place of roller blinds, and it becomes quite an art to manage the laths, though these blinds are on the whole the best.

Then the walls of bedrooms are in most instances covered with paper, and of all rooms in the house they are least frequently papered. "The lower rooms must be papered, they look so very dirty; the bedrooms are dingy, but they may stand over another year—nobody sees them." To carry out further the idea of snugness, the bedrooms are carpeted, it may be over their whole surface right up to the walls of the rooms, and the carpet is nailed down, so that it may be swept without being dragged out of its place.

Again, the bedroom is too often made a kind of half-lumber room—a place in which things that have to be concealed are carefully stowed away. "Under the bed" is a convenient hiding-place. It is the fact, that once, in a public institution for the sick which I inspected, there existed an arrangement by which each new patient who came in to be cured had his everyday clothes, after they were taken off his body, put into a rickety old box and pushed under his bed, to remain there until he was able to put them on again when he "left the house," or until he died, if his disease ended fatally, and his relations claimed them. I found eighteen of these boxes of clothes secreted systematically under eighteen beds in one insalubrious sick-room, or ward, of this establishment. In private houses this same plan of stowing away old clothes, old boots and shoes, and the like, is too frequently put in practice.

I notice once again that the occurrence of damp or wet in the ceiling and walls of a bedroom is much more readily tolerated than it is elsewhere. If a pipe burst, and the drawing-room, or dining-room ceiling is covered with a dark patch, ever so small, that must be at once attended to, it looks so very bad. But a patch of similar character may remain on the ceiling of the bedroom until it dries ; and then, being dry, may still remain, because, if the water should come in again, the condition will be as bad as ever.

I will say no more about bedrooms by way of fault-finding. The errors I have pointed out, when they are present, are unpardonable in regard to the healths of those who permit them, and inasmuch as the health of these is of far greater moment than their equanimity of sentiment, I must run the risk of disturbing the temper that I may assist the health. I feel the less compunction on this head, because what I am about to propose in the way of remedy means nothing but economy. I will tender in a few rules what are the essentials of a healthy bedroom. If they cannot all be carried out, many of them can be without any difficulty.



CHAPTER XI.

A GOOD BEDROOM,

LIGHT.



GOOD bedroom should, by preference, have its window either on the southern side of the house, the south-eastern, or the south-western. Of the three positions, the bedroom that has a south-western view is the most fortunate in our country. The winds from the south-west are the most frequent, and so the room can be most frequently ventilated by them, from the open window, during the day. These winds, moreover, are soft winds, and compare favourably with the eastern winds, from which it is always good to be protected as much as possible. The bedroom having a south-western aspect gets the longest share of light during the day. The early morning light soon feeds it with a subdued

and agreeable light, and in the evening it gets the later rays, almost the last rays, of the life-giving sun.

AIR.

The bedroom should in all cases, where it is possible, be shut off from the house during the time it is occupied, so that the emanations from other rooms may not enter it. It should be ventilated, I mean, independently. In our present houses the bedrooms are often the traps or bell-jars, into which, in too many instances, the air of the lower rooms, charged with the gaseous or vaporous products made during the day, are laid up. In these instances the occupants retire to sleep in an atmosphere of their own emanations, to say nothing of what comes from the kitchen, from gas, and from other sources of impurity. It is most easy to ventilate the bedroom independently. Nothing more is wanted than to remove one or two bricks in the outer wall near or beneath the flooring, and to carry up a wooden tube four inches square for a room of moderate size—say eighteen feet long, fourteen wide, and twelve high—into the room from that opening. This tube should ascend into the room six to eight feet. It may be covered at the top with a layer of gauze or muslin if the current of air be too strong. The tube should be six feet from the bed. The bed may be protected from a draught by a light curtain or screen placed between it and the tube.

In some houses it is not difficult to bring a four-inch wooden tube through the whole length of a partition from the top to the bottom floor of a house, and to let a supply of air enter that tube at the upper part, and distribute air to every room that lies in its course.

On rising in the morning the bedroom windows should be opened at the top and bottom equally, and, except when the weather is very wet, they should remain open until the sun begins to go down. It is a bad practice to leave the windows open later in the day, and this especially in the winter, for the air becomes charged with damp, and a damp air is as dangerous, if not more dangerous, than a close air. To sleep in damp air is quite as bad as to sleep in damp sheets, and is a most common cause of rheumatism, neuralgia, and chronic cold or catarrh. When the windows of the bedroom are closed, the door ought also to be closed, and the entrance of air into the room allowed to take place only through the communication with the external air by the ventilator.

While due provision is made for the entrance of air, an equal provision should also be made for the escape of air. This is best effected by an opening in the chimney shaft near to the ceiling where there is, or always should be, a fireplace and shaft. The opening for the escape of air up the shaft may be by an Arnott's valve or a Kite's ventilator.

When ventilation cannot be carried out by a

chimney shaft owing to the circumstance that there is no fireplace or shaft, it is next best to ventilate into the staircase by a double opening made over the door of the room. An opening twelve inches long and four inches wide is made vertically through the wall, in the space over the door. Into this opening is placed a metal frame as wide as the thickness of the wall, with a partition of thin metal planted vertically in the centre of it. When this metal frame is fixed in the wall, a current of air will be found to pass, after the room is closed, into the room on one side of the partition in the ventilator, and out of the room on the other side. This secures an outer current, which is better than none at all; it also admits a current into the room from the house, which, though very objectionable, is better than none.

The methods of letting air into a room are so cheap and so simple that every one can have them. There is no workman who cannot fit them up if he will.

It has been recommended by some sanitarians to ventilate the bedroom from the window by the plan of costless ventilation, as it is called, of Mr. Peter Hinkes Bird. By this plan the lower sash of the window is raised a few inches, the space between the window and the window-sill being filled up by a solid piece of wood. A space is in this way left between the two sashes, up which flows a constant current of air. I have tried the method, and I have modified it

by letting the upper sash down, and filling up the space between it and the top part of the window-frame with board, which is, I think, the better arrangement, and for staircases I do not think anything is so good. But in bedrooms, the windows of which are opened and closed frequently, and which have blinds, the plan does not answer so well as the tube of which I have spoken. There is more frequent draught from the window, and not, I think, so regular a supply of air.

According to strict rule, the air within the bedroom ought to be changed at least three times in the hour. In very few bedrooms indeed is this done, but it may be got near to if it be remembered that what is wanted is an opening to let fresh air into the room, and another opening by which the vitiated air can be let out. These openings should be of the same size. The one that lets in the air should, whenever it is possible, be so placed as to come from outside the house; the other opening for the escape of air should be into the chimney. The size of each opening should in no room be smaller than nine inches long by three inches wide.

Some persons close up the fireplace in the bedroom with curtains or with a paper or wooden screen. Others, if they do not close the fireplace, shut up the register in warm weather when fires are not wanted—in order, as they say, to prevent the soot from falling into the grate. These practices are very bad. Whether there

be a ventilator opening into the room from the chimney or not, the lower part of the grate ought to be left quite free, so that there may be always a draught up the chimney. It is also very good from time to time, even in warm or hot weather, to promote a draught up the chimney two or three times a month by burning briskly an old newspaper or two in the firegrate, so as to make a quick current of air ascend the chimney. By this simple plan the stagnant air in the room is carried away, and the bed and bed-curtains and all the articles of furniture are flushed with fresh air, and are, thereby, washed of much that is impure.

There is, it must be acknowledged, a great difficulty in admitting air into the bedroom from the outside, and at the same time excluding damp. In foggy weather, in damp seasons such as we so often have to pass through, this difficulty is almost insurmountable. I have tried several plans for drying air in its course from the outside into the room, but only with partial success. When the air of the room is well and equally warmed, the injury arising from moisture is greatly lessened, and it is therefore of moment, in foggy seasons, to keep up a considerable temperature in the room by which the water vapour will be removed, if there be at the same time free exit ventilation. But all plans of artificial drying are partial and mischievous. To stretch a layer of porous and dry woollen stuff over the opening that lets air

into the room, is the only mechanical plan I can suggest that is of real value. This, at all events, filters the air. It might be supplemented by introducing into a ventilating tube some loosely packed charcoal in good-sized pieces, over which the air would pass on its entrance into the chamber. Dr. Stenhouse suggested this plan as a means of purification of air, and it is a good suggestion.





CHAPTER XII.

WARMTH OF THE BEDROOM.



T is always a matter of great moment to maintain an equable temperature in the bedroom. A bedroom, the air of which is subject to great and frequent and rapid changes of temperature, is often a trap for danger. To persons who are in the prime of life, and who are in robust health, this danger is less pronounced; but to the young and the feeble, it is a most serious danger. It is very dangerous for aged people to sleep in a room that is easily lowered in warmth. When the great waves of cold come on in these islands, in the winter season, our old people begin to drop off with a rapidity that is perfectly startling. We take up the list of deaths published in the *Times* during these seasons, and the most marked of

facts is the number of deceased aged persons. It is like an epidemic of death by old age. The public mind accepts this record as indicative of a general change of external conditions, and of a mortality therefore that is necessary as a result of that change. I would not myself dispute that there is a line of truth and sound common sense and common observation in this view, but when we descend from the general to the particular, we find that much of the mortality seen in such excess amongst the aged, is induced by mistakes on the subject of warmth in the bedroom.

The fatal event comes about in this way. The room in which the enfeebled person has been sitting before going to bed has been warmed probably up to summer heat; a light meal has been taken before retiring to rest, and then the bedroom is entered. The bedroom, perchance, has no fire in it, or, if a fire be lighted, provision is not made for keeping it alight more than an hour or two. The result is that in the early part of the morning, from three to four o'clock, when the temperature of the air in all parts is lowest, the glow from the fire or stove which should warm the room has ceased, and the room is cold to an extreme degree. In country houses the water will often be found frozen in the hand-basins or ewers under these conditions.

Meanwhile the sleeper lies unconscious of the great change which is taking place in the air

around him. Slowly and surely there is a decline of temperature to the extent, it may be, of thirty or forty degrees on the Fahrenheit scale; and though he may be fairly covered with bedclothes, he is receiving into his lungs this cold air, by which the circulation through the lungs is much troubled.

The condition of the body itself is at this very time unfavourable for meeting any emergency. In the period between midnight and six in the morning, the animal vital processes are at their lowest ebb. It is in these hours that those who are enfeebled from any cause most frequently die. We physicians often consider these hours as critical, and forewarn anxious friends in respect to them. From time immemorial, those who have been accustomed to wait and attend upon the sick have noted these hours most anxiously, so that they have been called by one of our old writers "the hours of fate." In this space of time the influence of the life-giving sun has been longest withdrawn from man, and the hearts that are even the strongest beat then with subdued tone. Sleep is heaviest, and death is nearest to us all in "the hours of fate."

The feeble, therefore, are in greatest danger during this period of time, for they are subjected to one particular danger, that of congestion of the lungs; it is the breathing surface of the lungs that is most exposed to the action of the chilled air; and in the aged the exposure is always hazardous.

One of the ablest writers on old age, M. Reveillé-Parise, attaches so much importance to the function of the lungs in the aged, as to come to the conclusions, first, that old age commences in the lungs; and secondly, that, as a rule, death commences in the lungs in the aged. He reasons in this manner: "If we reflect that it is from the blood that life derives the principles which maintain and repair it, that the more vigorous, plastic, and rich in nutritive principles the blood is, so much the more organic life increases and manifests itself, and that the organ of purification is the organ of respiration, we shall be compelled to admit the opinion that the age of general decline commences with the decay of the lungs, and that the one is the result of the other."

Another French writer, Flourens, thinks the above to be true in part only. "Old age," he says, "does not commence in any organ. It is not a local, but a general phenomenon. All our organs grow old, and it is not always at the same organ that we feel the first effects of age; it is sometimes one, sometimes another, according to the individual constitution."

I agree, for my part, with both these authors, because I think there is nothing in experience which is different or is in opposition to either of their views. The one is correct in saying that all the organs grow old together. The other is correct in suggesting that the lungs more usually go first, because they are at one

and the same time most exposed and most immediately vital.

The practical question that comes out of this discussion is, How shall the danger be avoided in the sleeping apartments of the aged and enfeebled?

Our forefathers replied to this question in a very plain and striking manner. They shut themselves up in a warm tent. The old four-posters and the old tent-bedsteads are still the witnesses of the ways and means for keeping out the cold in the old times. In country houses one sometimes finds still the massive four-post bedstead, with its heavy damask curtains and snug enclosure. Advocate of fresh air as I am, I confess still to a lingering liking to this snug enclosure when I see it on a cold mid-winter night. I met with it not very long ago, and crept into it with a sort of quiet glee, as if feeling unusually safe and comfortable in so cosy a retreat.

I won't let mere likings tempt me to say that the plan is a good one. It is really not commendable, or is only so when nothing better is at hand. If in a large room, with cold walls and floors, on a cold night, I were obliged to sleep in a fireless room, and had the choice of two beds, one a curtained four-poster, and the other a truckle bedstead, I would no doubt, under the special circumstances, choose the four-poster, but not as a general principle by any means.

In our modern bedrooms, furnished according to modern fashion, the best plan to adopt is that of admitting air freely to the sleeper, at the same time taking care that throughout the whole of the night the air shall be kept, within a few degrees, at the same temperature; for uniformity of warmth during all the hours of sleep is as essential as warmth. To have an overheated atmosphere at one time of the night and a low temperature at another, is just the kind of change that is attended with most risk. Indeed, I doubt whether an equable cold atmosphere is not, on the whole, safer than one in which there are frequent and marked variations.

The safest method is to have the air of the room, a short time before it is occupied, brought up to an uniform temperature of from 60° to 65° Fahr. It should never fall five degrees below 60°, and never rise above 65° under ordinary circumstances. In cases where the occupant of the room is extremely enfeebled, it may be necessary to raise the temperature to a higher point, but I am thinking at this moment of sleepers who are in fair health, and for whom no such special provision is required.

A mistake is sometimes made in observing the temperature. The reading of the thermometer is taken in one part of the room only, perhaps in the warmest part, that is to say, over the fireplace or from the mantel-shelf. This is not a fair observation, for a room at that part may be very warm, while it is very

cold in other parts. The temperature should, properly, be taken at the bed's head, about two feet above the pillow, and that is the best position in which to keep the thermometer, with which every bedroom ought to be furnished. An ordinary thermometer suffices as a general index, but a registering instrument is most advantageous when particular care is demanded in observation, because such an instrument records the highest as well as the lowest temperature that has been present in the course of the night.

Within the last few years a cheap thermometer has been made, which marks the healthy degrees of warmth on a scale. It shows degrees from below 50°, "too cold," up to 70°, "too hot," and it tells, by a short description at different degrees, the limits of winter heat, of the heat of a room, and of summer heat. This is called the sanitary or house thermometer, and it is so simple and practical that any child who can read can soon understand it. It has also the great advantage of being a very cheap as well as reliable instrument.

I now come to consider what is the best mode of warming the bedroom, and of maintaining the equal warmth, on which so much has been insisted. In most houses the ordinary open fireplace has to be depended upon for warming the room, and when the art is learned of packing the fire so that it will remain in all

night, the success may be fairly secured ; but there is always the risk of the fire going out, and the warmth is rarely diffused through the room in an equal degree.

The simplest of all plans with which I am acquainted is that which brings air from the outside through a small chamber or pipe that can be heated by a fire or by gas, and which allows the air, after it has been warmed, to diffuse steadily into the room.

A stove, called the Calorigen, invented by Mr. Webb George, is, in my opinion, best adapted for use in the bedroom. It burns either with coal-gas, or coal, or mineral oil ; or, more correctly speaking, a Calorigen stove can be obtained either for gas, or for coal, or for mineral oil. The stove has this great advantage, that it warms and ventilates at one and the same time. The stove contains within its outer cylinder or case a spiral iron tube, which, by its lower end, communicates with the outer air, and by its upper end opens into the room. The heat generated in the stove communicates heat to the spiral tube, and the air in the spiral is heated and ascends into the room. The ascension of warm air causes a draught from below, and so a current of warm air is at all times diffusing through the room, so long as the fire of gas or coal is burning. At the same time, the products of combustion from the stove are conveyed away by another pipe into a flue or chimney.

When one of these stoves is in good action, the air of an apartment may be kept pure and warm for any length of time, and the temperature can be maintained at the same uniform degree all the while. There is also about the method the immense advantage that it secures freedom from cold draughts from doors and from windows. The copious influx of warm air from the stove is, indeed, so effective, that when the stove is heated to its full, and the room is of moderate size, there is a draught or current of air out of the room, by the doors when they are opened a little way, unless there be a provision for a fixed ventilating outlet. Properly, there ought always to be a ventilating outlet; for even when the room is steadily charged with fresh and warm air, a steady outgoing current is desirable.

In the bedroom, the stove I refer to is, of these adaptations, the best I know of. It is steady in action when it is once started, and it can be put up anywhere where there is a chimney for receiving a pipe to carry off the consumed air. Lastly, it is quite safe in the bedroom; the fire being enclosed, no sparks can fly from it, and the burning makes no dust within the room.

In the Anerley Industrial Schools, I found these stoves in common use in the rooms where the children slept. They were much approved of by the school authorities.

There is one precaution which I would suggest to those about to introduce a Calorigen

stove into their bedroom. When the stove is fixed, it is usual for the man who fixes it to push the air-feeding pipe through the floor of the room, so as to get the supply of air from under the floor. No arrangement can be better if due care be taken, but it is essential to make sure of three things in carrying out this plan. Firstly, it is essential to see that there is a free opening under the floor, from the outer wall by a perforated brick or grating, so that the air-chamber beneath gets a due supply of fresh air from without. Secondly, it is well to see that there is no gas-pipe running beneath the floor, from the joints of which gas could escape and be drawn by the stove into the air of the rooms above. Thirdly, it is important to have the space below the floor quite free of old rubbish, and to have it made thoroughly dry. All these steps are really essential, for if there be no admission of air beneath the floor from without, the stove will exhaust, and the space will be recharged with air from the room through the openings and chinks in the flooring; if there be any escape of gas beneath the floor, the stove will draw the gas into the room; if there be decomposing matter or dust beneath the floor, the stove will also distribute them; and if there be damp, it will diffuse the damp, which, as we have already found, is most injurious.

I name these possible errors because I have seen them all made, and actually, in one instance, I saw removed from beneath the floor of a bed-

room and dressing-room several barrow-loads of dust and refuse which had been lying there for nearly a century. The workmen, in building houses, care little about leaving dust and rubbish on ceilings that are covered by floors. In this case the rubbish consisted of shavings, sawdust, and sundry other things, such as old slippers and shoes, which had been lying there ever since the house was built, covered with dust and slowly rotting away.

If it be impossible, or if it be too expensive, to lift up the floor-boards and clean the whole of the space beneath, the next best thing to do is to take up a single board, and under it to carry a box one foot deep beneath the joists of the floor, from the point where the air-pipe of the stove pierces the floor-board to the outlet in the wall in which the air-brick or grating is inserted. The floor-board will form, as it were, the lid of this box, and the air, drawn by the stove, will be through the box direct from the outside. The box should be made of pine wood, and neatly planed on its inner surface. That surface should be polished with beeswax and turpentine so soon as the box is laid in, and from time to time the floor-board should be removed and the polishing should be repeated. The air passing over the surface of wax and turpentine is made singularly healthy and pure, and if it enter the chamber at a temperature of 60° to 65° Fahr., the fresh odour is distinguishable in the room after the room has been for

a short time unoccupied. These plans are all very simple to carry out where they are simply explained, and as a bedroom that is well and easily warmed, and well and easily ventilated, is of priceless value, I make no apology for spending a good deal of time on a topic so essential to the health during the long hours of sleep.





CHAPTER XIII.

BEDROOM FLOORS.



THE bedroom can hardly have too good a floor, and, after all, no floor is so good as one of wood. If the wood is smooth and well planed, it may be rubbed all over with wax and turpentine without being either stained or painted ; or it may be stained all over and varnished ; or, if it be rough, and will not take stain well, as is not uncommon in cases where the house is very old, the boards may be covered with a good layer of zinc lead paint, coloured according to the taste of the owner, and afterwards well varnished.

My own liking is for Stephens's wood stain, when the boards will admit of the application of it ; and, taking it all in all, a light oak stain is, I think, the best. The stain may be applied

by any person who is at all deft at performing such work. The floor is, in the first place, to be well cleansed by dry scrubbing with clean saw-dust, and any great roughnesses and irregularities are planed or otherwise smoothed down. Then the whole surface is covered with a layer of thin size, which is allowed to dry. The stain is next prepared by mixing it with water to get the required depth of tint, and in sufficient quantity to cover all the surface without having recourse to a new solution. The stain is lightly and evenly laid on with a piece of sponge, and is left to dry completely. Finally, a good layer of varnish is laid on with a brush over the stained surface, and when the surface is dry, the next best floor to a floor of real and of polished oak has been obtained at little trouble and small cost.

The floor prepared either by use of wax and turpentine, or by staining and varnishing, or by paint and varnish, should afterwards be kept clean by dry rubbing, and the occasional use of a moist flannel. After a short time the varnished floors take the wax very well, and by the firm and smooth surface so obtained nothing is absorbed to create bad air. The floor is easily dusted. Loose particles of dust, feathers, and woollen fluff are readily detected, and the fact that there is any collection of dust or dirt on the floor is at once made obvious. There are no crevices or rough places in which the dust and fluff can be concealed on these smooth floors.

There cannot, I think, be a doubt that for the bedroom floor dry cleansing is, as a rule, the best. Scrubbing with water destroys the varnish on stained and painted floors, making them patchy and dirty-looking by destroying the evenness of surface; water makes the adoption of the waxed floor almost impossible; water, when it is often used, gets into the joints of the floor-boards, causing them to separate and become holders of dirt; lastly, when water is used for cleansing, the chances are many in the course of a year that the room will be left damp and chilly. The floor will be washed on some dark and foggy days, the boards will dry imperfectly, and though, at bedtime, they may be to appearance dry, they will not be so entirely, while the air of the room will be still charged with moisture; so that, although the sleeper may not get into a damp bed, he may get into a damp bed-room, which in some respects is equally injurious.

I have seen such very bad results from damp sleeping-rooms in which the dampness of the air has been caused by washing the floors, that I cannot press the lesson I wish to enforce too forcibly or earnestly.

When from any circumstance the floor of the bedroom cannot have given to it a varnished or waxed surface—when, for example, the surface of the floor is simply of plain wood—it may seem to be absolutely necessary to clean the surface

with water. These floors, however, are just the floors that hold water the longest, and for all reasons are least adapted for water-cleansing. How, then, it will be said, are such floors to be cleansed? They are most easily cleansed in one dry way, viz. by dry scrubbing with sawdust. The cleaner takes up a small pailful of fresh white sawdust, and lifting it out by handfuls, spreads it on the floor, and with a hard, short-bristled brush scrubs with the sawdust as if she were using water itself. When the whole surface has been scrubbed in this way, she sweeps up the sawdust, and finds beneath it a beautifully clean and dry floor; or, if there be left any part still dirty, she easily remedies the defect by an additional scrub at that part. When all is finished, she carries the dirty sawdust away, and destroys it by burning it in the kitchen fire.

I have next to speak about carpets in bedrooms. I need hardly insist on the fact that the old-fashioned plan of covering every part of the bedroom with carpet stuff, so as to make the carpet hug the wall, is as bad a plan as can possibly be followed. In these days everybody is beginning to recognize this truth, and the change which has taken place within the last ten years, in the matter of carpets for bedrooms, is quite remarkable. In some instances I notice that an extreme change, which is neither wanted nor warranted, has been instituted; that is to say, instead of the carpet that at one time

covered all the surface of the floor with the greatest nicety of adaptation, there is no carpet at all. This extreme change is not very desirable. It is good to have carpets in every part of the room where the feet must regularly be placed. It is bad to have carpets in any part of the room where the feet are not regularly placed. These two rules govern the whole matter, and the most inexperienced housewife can easily remember them. By these rules there should be carpet all round the bed, carpet opposite to the wardrobes or chest of drawers, carpet opposite the washing-stand, carpet opposite the dressing-table, but none under the beds, and none for a space of two to three feet around the room, that is to say, two or three feet from the walls of the room. The carpets that are laid down should be free from each other, so that each one can be taken up separately and shaken with the least trouble.

Carpet stuff for bedrooms should be made of firm material closely woven, and not fluffy on the surface. Felt carpet stuff for bedrooms is what is commonly recommended in the shops, and after that Axminster or Brussels. The first is all wrong ; it never lies neatly, it very quickly accumulates dust, and it is really not, in the end, economical. Axminster is more free from these objections, but it is not so good as Brussels. There was a form of Brussels carpet called "tapestry," which some years ago was very largely used. It was as warm as the

thickest blanket, and it was almost like wire in fibre ; in fact, it was tough enough to last half a lifetime, and it was the best carpeting for bedrooms I ever remember. Fluff adhered to it very slightly, it held an exceedingly small quantity of dust, and it was always in its place on the floor. "Tapestry" went out of fashion in due time and season, but it would be wise to reintroduce it.

The advantages of small carpets in the bedroom are many. They cause the footsteps to be noiseless, or comparatively noiseless, they prevent the feet from becoming cold while dressing and undressing, they make the room look pleasant, and, when used in the limited manner above suggested, they save trouble in cleansing by preventing dust and dirt from being trodden into the floor.





CHAPTER XIV.

THE WALLS OF THE BEDROOM.



FROM the floors of the bedroom we may pass to the walls and ceiling. These should be covered, in every case, in such a manner that they may be at any time effectively cleaned at as little expense and trouble as is possible. We have been accustomed for a long series of years past to use papers for the covering of bedroom walls, and in the shops for the sale of wall-papers it is the usual thing for the salesman to offer for inspection a distinct series of bedroom papers, the patterns of the paper and the quality of the papers being specially displayed in order to meet the tastes of the purchasers. There is no doubt that extremely beautiful and artistic papers are to be bought,

and paper has the recommendation of presenting for selection a variety, and often a beauty of pattern, which offers an enticing suggestion. But, after a short time, the most beautiful pattern causes weariness. The sight every night and morning of just the same lines and series of objects, so many groups, so many figures, so many flowers, so many singular or imaginary designs, becomes in time a wearisome process, and in the bedroom often intolerable. This sameness, which stands as an objection even to a handsome paper, is a minor objection when it is compared to others which have to be mentioned.

In some instances the paper itself is unwholesome owing to the surface of it containing arsenic, which, having been used for colouring purposes, is given off in fine dust, is disseminated through the air, and is breathed by the occupant of the room to his decided injury. The common view held on this subject is that the papers called flock papers, and papers of green colour, are those only which give off arsenical dust; but this is not strictly true, for Dr. Leonard Sedgwick found that a blue paper gave off arsenical dust into a bedroom, and that for a long time the sleepers in the room were suffering from the irritation caused by arsenic without discerning the true cause.

The symptoms which indicate that persons are suffering from inhalation of minute particles of arsenical dust, are irritation of the throat,

irritation of the eyes, dyspepsia, dryness of the skin, and, in very bad instances, redness and dryness of the tongue, with sensation of thirst, and, it may be, slight disturbance of the bowels, accompanied with pain.

The argument usually offered for the adoption of paper as a wall-covering is the economical argument that the paper lasts so long. Once put up, it is not necessary to touch the wall again with a new covering for five or even seven years. In some leases and agreements there is a clause directing that the walls shall be papered every five or seven years, and the tenant often makes it a point never to do more at most than just to carry out the said agreement. The paper being once up, the walls look clean and nice. "It will last another year very well. It is getting dingy, certainly, but then it is such a nuisance to have in the paperhanger, and go through the worry of emptying the room for him." So month after month the long-doomed paper is allowed to hang, until from actual necessity it is removed and replaced with a new paper.

Imperceptibly, but surely, a room, the walls of which are covered from year to year with the same paper, is a room the air of which is dirty, so that the very temptations to delay its renewal, and the very arguments of economy, become a strong objection to papers altogether. When the air of the room is damp the paper gets damp. In the damp state it attracts readily the

dust that is in the air. When the weather gets dry and warm, or when the room is warmed by a fire, the dust becomes dry on the paper, and is then easily wafted and distributed through the air of the room; while if the paper be at all rough or raised the small irregular spaces are at all times receptacles for dust. This is another strong objection to the paper covering for the wall.

A final objection to the paper covering is the mode in which it is put on the walls. As a common practice layer is laid on layer until several layers are put one over the other. I have once seen a room stripped of no fewer than ten layers of paper before the wall was reached. By this plan the room becomes lined with coating after coating of paste, which in course of time is decomposed, is turned into fine organic dust, and is itself, whenever the paper is torn away so as to allow of an escape of dust, a decided source of danger to health. Let sickness take place in a room the walls of which are treated in the manner above described, let the particles of the poison of a contagious disease disseminate in such a room, and almost of a certainty some minute portion of the particular poison will be cased up behind the new paper that is laid on, to remain a source of danger for after occupants of the rooms for years and years to come.

For these reasons, which I think are sound and practical, the common style of paper for the

walls of the bedroom is not the best unless it presents a permanent surface, and a surface that admits of systematic cleaning by means of soap and water or by dry scrubbing.

The first approach I ever saw to perfect success in papering bedroom walls was in a room in the house of my friend Dr. Thursfield, of Leamington. Dr. Thursfield had a room very carefully papered with a good fine paper of oak pattern. This paper he coated with coachmakers' varnish until the complete surface was in truth as hard as the panel of a carriage itself. The wall could be washed with the greatest ease, and was as perfect as need be. Sometimes in the halls and on the staircases of houses we see oak and marble papers which are varnished, and which bear to be washed very well, but I have never seen walls so perfect as the walls of the room I specially name, and certainly seen no approach to anything of the kind in a room or a bedroom.

Within the last few years the paper manufacturer has overcome the difficulty, and produces now a perfectly washable material. Mr. Fisher has constructed a paper which can be scrubbed with a brush as if it were woodwork, and when it is so cleansed comes out like new material. He has fitted up for me a bedroom and a library on this plan, and after two years' service the walls are, I may say, as good as ever. The surface is so smooth that dust and dirt do not readily accumulate upon it, and if they do,

the remedy of the scrubbing would at once take good effect. In imitation of Mr. Fisher's plan, some cheaper papers are now sold, which answer the purpose temporarily, and one specimen, which costs something like twopence a yard and which I have tried, answers very well. These papers are not so permanent as Mr. Fisher's, but they can be washed twice without detriment; they do not readily absorb dirt, and they are as easy to hang as ordinary papers. They are sold under the name of "washable papers" by almost all paperhangers, and they will no doubt soon come into general use.

Presuming that paper is used for the walls of a bedroom, there are certain rules which ought to be followed in respect to the selection. The first of these is that the paper selected should not be a flock paper; next, it ought not to have a raised or rough surface; thirdly, the pattern should be of the plainest kind, and, if I may so express it, patternless; fourthly, the colour should be grey or sea-green; and lastly, the paper, unless it be washable, should be changed every five years at least. Moreover, in changing the paper, there should be no slipshod method of putting on a new paper before the removal of the old. The old paper should be entirely stripped off, the wall should be well cleansed of dry paste, and the new paper should be put on with paste that is quite fresh and pure. The introduction of a little alum into the paste is always good practice.

In cases where a person has suffered from any one of the contagious diseases, and has occupied a room the walls of which are covered with paper, there should be no hesitation, when the room is relieved of its occupant, in clearing every particle of paper from the wall at once, so as to make the purification as complete as possible. I usually direct in those cases that the paper, while it is still on the wall, should be saturated with water that is at boiling heat, the water being applied with a house flannel or woollen mop. In this manner two purposes are served: the heat disinfects, and the paper is made to peel off with great readiness and completeness. When the paper is thus removed down to the solid walls, the walls may be fumigated with sulphurous acid vapour and afterwards washed down, sponged and allowed to dry. After such cleansing, the new paper may be laid on, the ceiling having been previously cleansed and coloured.

If paper be not used for the covering of the wall of the bedroom, recourse may be had to one or other of the following plans:—

In a newly built house there can be no better outlay than that which would be devoted to the plan of making the walls of the bedroom quite impermeable and smooth, by covering them with a firm cement, like parian. The walls ought to be made so readily cleansable that they can at any time be scalded and washed, just as a piece of crockery can be scalded and

washed. The simple plain surface is better than the tiled surface ; it is more easily cleansed, and it does not weary by a pattern that is immovable. It has been objected to this plan that when it is adopted the wall becomes covered with moisture whenever the air is charged with moisture. The objection would be sound if the air must, by necessity, be so charged with moisture as to produce the effect stated ; but, in truth, this ought not to be the case. If the air of a room is so damp that water will condense on the walls, it does not signify whether those walls be permeable or impermeable, for the air will be damp all the same. The only difference will be in what is seen. If the walls be impermeable the condensed water will be visible, and will run down the walls, whereby it will be known as a fact that the air is, or has been, loaded with moisture. If the walls be coated with a substance which absorbs and holds the water, the damp will not be seen, but it will be there all the same, for it will have passed into the covering of the walls, and will remain until it is given up again to the air of the room at a drier time or season. We may observe this fact well illustrated from the looking-glass in a damp room, that has, at the same time, a damp permeable wall. The wall may seem as dry as a bone, but the glass may be so covered with moisture that there is no reflection at all from it. The wall here is not less damp than the glass, but it holds the damp,

and is, therefore, the more dangerous. Supposing, then, that a room with an impermeable wall shows signs of moisture on the wall, the evidence is definite that such a room is not properly ventilated, or that water, as damp, has access to it, or that it is so cold that water easily condenses upon it; whereupon the effort should be, not to make the wall porous, but to keep the air of the room warm and dry.

In houses that are already built, and that have simply plaster walls, the plan of covering the walls with an impermeable cement may be too expensive or otherwise undesirable. In these instances we may have recourse to paints and to distemper. Ordinary old-fashioned lead paint for walls, when it is laid on properly and is of best quality, is always good. It is expensive at first, but it is very durable; it admits of ready cleansing, and when it is well varnished the surface of it may be washed many times without injury. If the paint has been simply flatted, it may also be washed very often, provided that neither soda nor other alkaline substance be used with the water.

If neither paper nor paint be used for the bedroom wall, there remains the old and simple plan of colouring with distemper, and really, after all, this cheap and easy method is as good as any. Distemper colour is wholesome as a covering, it is cheap, and it suggests more than paper does—a frequent renewal.

It is worth noting that in instances where the

wall has been covered with paper, and where the paper is not broken away or torn at any part, and where, for any reason, it is not felt to be desirable to remove the paper, one or two coats of distemper may be laid on the paper after a coating of size as a preliminary. If the paper be smooth, the pattern of it will be entirely covered by the wash; if the paper be not smooth—if, I mean, it has on it a raised pattern—the distemper will give an outline of the pattern which, though quite distinct, is not disagreeable to the sight.

Whichever be the substance used for covering the walls, whether lead paint, or distemper, the colour should, I think, be the same as was suggested for paper, namely, a light green, what is, I believe, called a “sea-green” colour. This colour, taking it all in all, is most pleasant to the sight as a colour to be regularly gazed at. When the eye meets it on awaking it offers no resistance nor sense of unpleasantness, and it bears to be looked at more frequently than other colours. In this respect it resembles the grass of the fields, the verdure of the forest, and the surface of the sea. After the green, grey or russet red colour is most to be desired.

While I have advocated a perfectly plain surface for the walls of the bedroom—that is to say, an absence from anything like a staring permanent pattern—I would earnestly encourage the ornamentation of the walls by objects of good art that are easily removed and changed.

Good pictures, and other ornaments are excellent in the bedroom. At the same time, it is wise and wholesome practice to break the uniformity of decoration from time to time. The health of the body is very much modified by the tone and turn of the mind, and whatever creates a pleasurable diversion of mind, however simple it may be, is wholesome to the body not less than to the mind itself.

THE CEILING.

The ceiling of the bedroom is the next consideration after the walls. This should be attended to more frequently than is customary in most households. The ceiling should be recoloured once in two or three years at least, either with ordinary white or limewash, with distemper, or with zinc paint. The colour of the bedroom ceiling should not be pure white; it should be slightly toned towards blue or green.





CHAPTER XV.

FURNITURE, BEDS, AND BEDDING.



It may be taken as a general rule that a bedroom should have in it the least possible amount of furniture, and that whatever furniture there is in it should be as free as possible of all that can hold dust and fluff.

THE SINGLE BED.

I cannot do better than commence what I have to say concerning beds and bedding by protesting against the double bed. The system of having beds in which two persons can sleep is always, to some extent, unhealthy. No two persons are so constituted as to sleep naturally under the same weight of bed-clothes and on the same kind of bed-clothes and on the same kind of bed and mattress. But sleep, to be perfect and profound and restorative, should be so prepared

for, that not a single discomfort should interrupt it.

An illustration of this healthy practice will be found in the Industrial Schools at Anerley. The visitor to those schools will see in the sleeping-rooms there that each child has its own little bed; a reform which, with another to be referred to in a future page, goes far to explain why these children, often most unhealthily born, are reared into a condition of health which is singularly good.

It will be asked if this plan is not expensive and troublesome, causing double bed-making, double bed-airing, double laundry work, and double cost of bed-linen and coverings. The reply is that there is an extra cost in regard to these particulars, but that, on the whole, there is an untold saving in relation to health. The children rise from their beds really refreshed, and in every way better for the separate accommodation. In this manner the sick-list is kept free to a great extent, and as one sick child in its infirmary sick-couch is an anxiety by night as well as by day, and as one sick child confined to its bed by its sickness is more trouble and anxiety than half a dozen healthy children occupying each a separate bed during sleeping hours, there is a positive saving of trouble and of expense in the course of the year from the practice of the single-bed system.

It is not difficult to discover the reason of this saving of health. The fact that no two

persons are constituted to require the same kind of clothes and the same kind of bedding has been already adverted to, to which may be added the further fact that no children or persons can sleep under the same covering without one being some discomfort to the other, by movement, position, or drag of the bedclothes.

Beyond these discomforts, moreover, there is the question of emanations from the breath. At some time or other the breath of one of the sleepers must, in some degree, affect the other : the breath is heavy, disagreeable ; it may be so intolerable that in waking hours, when the senses are awake to it, it would be sickening, soon after a short exposure to it. Here, in bed, with the senses locked up, the disagreeable odour may not be realized ; but assuredly, because it is not detected, it is not less injurious.

I need not pursue this subject much further ; common sense will tell everybody, who will reflect on the subject with common sense, that it is best for persons of every age to have to themselves the shelter within which they pass one-third of their whole lives—thirty years of life, if they live to be ninety years old.

I dwell, therefore, only on one point more in favour of the single bed, and that is to enforce the lesson that under the single-bed system it is impossible to place very old and very young persons together. To the young this is a positive blessing, for there is no practice more

deleterious to them than to sleep with the aged. The vital warmth that is so essential for their growth and development is robbed from them by the aged, and they are enfeebled at a time when they are least able to bear the enfeeblement. And yet we find amongst the poorer classes an idea that this bad, very bad practice is good. I have known, over and over again, a child put to bed with one or other of the grandparents, because of the warmth which the old person derives from the young.

BREATHING SPACE.

The single bed for every sleeper determined on, the size of the bedstead and the number of bedsteads in the room, according to space, should be considered.

For ordinary adult persons the bedstead need not exceed three feet six inches in width by six feet six inches in length; but in no room, however well it may be ventilated, should a bedstead be placed in less than a thousand cubic feet of breathing space.

A bedroom for two single beds should not measure less than sixteen feet long by twelve feet wide and eleven feet high. There are some sanitarians who would not be satisfied with those dimensions for a room to be occupied by two persons, and I frankly admit the dimensions are close to the minimum, though with good ventilation they may, I think, suffice. With bad ventilation they are confessedly out

of court, and I name them merely for the sake of meeting the necessities of the limited bedroom space that belongs to the houses of great cities. In my own mind, I do not consider twice the amount of space named at all too much, even with the ventilation as free as I have suggested in previous chapters of this work.

BEDSTEADS.

The bedstead should be made of metal, of iron or brass, or of a tasteful combination of those metals. Wooden bedsteads are altogether out of date in private houses. They are not cleanly, they harbour vermin, and they are not cleansible like a metal framework. The framework of the bed should be so constructed that the bed or mattress is raised two feet from the floor of the room, and the whole framework should be steady and so well put together that the movements of the sleeper shall cause neither creaking nor vibration.

BED-CURTAINS.

A good deal of controversy has been raised on the matter of curtains for beds. From the old system of curtains all round the bed, like a tent, there has been a reaction to an entire abolition of the curtains. I am of opinion that this complete change is not beneficial. Two light side head-curtains with a curtain at the back of the head and a small tester, are, I think,

very good parts of a bedstead. The curtains fulfil a doubly useful purpose; they shield the head and face of the sleeper from draughts, and they enable the sleeper to shut out the direct light from the window without in any way necessitating him to shut the light out at the window itself. The room may be filled with light, and yet the sleeper may be shielded from the direct action of it upon his eyes if he have the curtain as a shield.

THE BED.

The kind of bed on which the body should rest is a question on which there is extreme divergence of opinion. Whenever we leave our own bed to go to sleep elsewhere, in an hotel or in the house of a friend, it is almost certain we shall find a bed differing from that to which we are accustomed. We may find a bed of down so soft that to drop into it is like dropping into light dough; we may find a soft feather bed, a soft mattress, a spring mattress, a moderately hard mattress, or a mattress as hard, I had nearly said, as the plank bed for which our prisons are now so unenviably notorious. These differences are determined by the taste of the owner of the bed without much reference to principle, or to the likings of any one else in the world; not a very good or satisfactory state of things. There ought to be some principle for guidance in a trial so solemn as that which settles the mode in which our

bodies shall rest for a third of our mortal existence.

I fear it is hard to fix on definite principles, but there is one principle, at any rate, which may be relied on, and which, when it is understood, goes a long way towards solving the question of the best kind of bed for all sleepers. The principle is, that the bed, whatever it be made of, should be so flexible, if I may use the term, that all parts of the body may rest upon it equally. It ought to adapt itself to the outline of the body in whatever position the body may be placed. The very hard mattress which yields nothing, and which makes the body rest on two or three points of the surface of the body, is at once excluded from use by this principle, and I know of nothing that ought to be excluded more rigorously. On the other hand, the bed that is so soft that the body is enveloped in it, though it may be very luxurious, is too oppressive, hot, and enfeebling; it keeps up a regular fever, and cannot fail to exhaust both physical and mental energies, while at the same time it really does not adapt itself perfectly to the outline of the body.

The best kind of bed, taking everything into consideration, is one of two kinds. A fairly soft feather bed laid upon a soft horsehair mattress, or a thin mattress laid upon one of the elastic steel-spring beds which have lately been so ingeniously constructed of small connected springs as to yield in a wavelike manner to every motion.

It is against my inclination to try to write out the time-honoured old feather bed and mattress, but I am forced to state that the new steel-spring bed is, of necessity, the bed of the future. It fulfils every intention of flexibility ; it is durable ; it goes with the bedstead, as an actual part of it, and it can never be a nest or receptacle of contagion or impurity.

On the subject of bed-clothes, the points that have most to be enforced are that heavy bed-clothes are always a mistake, and that weight in no true sense means warmth. The light down quilts or coverlets which are now coming into use rank amongst the great improvements that have been made, in our time, in regard to bed-clothes. One of these quilts takes well the place of two blankets, and they cause much less fatigue from weight than layer upon layer of blanket covering. These should be porous, and then they would be perfect.

As to the actual amount of clothes which should be on the sleeper, I can lay down no rule of numbers or quantities, because different people require such different amounts. I can, nevertheless, offer one very good practice which every person can learn to apply. It should be the rule to learn so to adapt the clothing that the body is never cold and never hot while under the clothes. The first rule is usually followed, and need not be dwelt on ; the last is too commonly broken. It is a practice too easily acquired to sleep under so much clothing

that the body becomes excessively heated, feverishly heated. This condition gives rise to exhaustion, to disturbing dreams, to headache, to dyspepsia, and to constipation. It is so injurious that it is better to learn to sleep with even too little than with too much clothing over the body. This, specially, is true for the young and the vigorous. It is less true for the aged, but in them it holds good in a modified degree.

The position of the bed in the bedroom is of moment. The foot of the bed to the fireplace is the best arrangement when it can be carried out. The bed should be away from the door, so that the door does not open upon it, and it should never, if it can be helped, be between the door and the fire. If the head of the bed can be placed to the east, so that the body lies in the line of the earth's motion, I think it is in the best position for the sleeper.

FURNITURE.

The furniture of the bedroom, other than the bed, should be of the simplest kind. The chairs should be uncovered and free from stuffing of woollen or other material; the wardrobe should have closely fitting doors: the utensils should have closely fitting covers, and everything that can in any way gather dust should be carefully excluded.

In a word, the bedroom, the room for the third of this mortal life, and that third the most helpless, should be a sanctuary of cleanliness

and order, in which no injurious exhalation can remain for a moment, and no trace of uncleanness offend the eye.

BEDROOM WINDOW-CURTAINS AND BLINDS.

There is much difference of opinion on the question of window-curtains and window-blinds in the bedroom. Some persons who have been unhealthily educated are unable to sleep except when the room is entirely dark, the faintest ray of light being sufficient to break their repose. Others can sleep when light enters into the room in the fullest degree. I have no doubt those are most healthy who can sleep without any window shade whatsoever, and I am sure that every one can be trained so as to sleep without blinds if the training do but commence early in life, to the use of no further curtains than two light ones at the bed's head, as already described. Light purifies and invigorates; and children that sleep in darkness may be distinguished, by their blanched faces alone, from those who sleep in a well-lighted room. More than this, the admission of daylight early in the morning tends to create a habit of early rising, which is most conducive to health.

They who hail the sun instead of letting the sun hail them are the wise people. They who sleep like moles in a hole, though they may grow sleek and fat, are not sun-healthy; they are feeble, subject to headaches, excitable, pale, and nervous. For these reasons I would, there-

fore, teach that the half-blind of muslin is all that is sufficient for the bedroom window, and that the roller-blind should only be used to prevent the actual glare of the sun, or to shut out the view into a room that is exposed to other houses that overlook it. Heavy curtains for bedroom windows, or curtains of any kind, are altogether out of place, except as mere ornamental appendages and, when present for mere appearance sake, should never be drawn except on emergency, as in seasons of extreme cold or heat.

A light green colour is best for the roller-blind.





CHAPTER XVI.

BATHS AND BATHROOMS.



IN every properly constructed house, however simple it may be, there should be a proper arrangement for perfect cleansing of the body once a day at all times, twice a day under special circumstances.

At one time in the memory of many of us the bath was thought to be a fad, and the bathroom a luxury, in the possession of which none except the wealthy could indulge.

But times have changed, and in this day people who have been busy all day at hard work call for a bath. "The dirtier the work, sir, the more need of the bath, sir," a working man at Brighton said to me when I was making an inspection there ; and this I believe is becoming a very general idea.

There is nothing more encouraging than the of cleanliness amongst any people, and

as it now seems nothing but a state of complete apathy and age-after-age training in dirt could ever have led to that uncleanness which we have been so much accustomed to see in past times amongst members of the human family. We notice every day with what care many members of the lower creation wash and plume their bodies. The domestic cat is a capital instance of this care. The cat spends half her time in keeping herself clean, and some animals seem never so happy as when they can get a lake or stream in which to wash and be clean.

In man the liking or disliking of the bath is altogether a matter of habit. If a man or woman be brought up from childhood to the use of the bath the habit will remain, and it will be a loss each day if the general washing of the body be omitted. Some take a bath twice a day, morning and evening; others take it only in the evening; and there are few persons who could not get into the habit of the morning and evening bath as they do into the habit of taking meals at stated times. But if for any reason it be impossible to carry out complete ablution twice a day, then no doubt it is best to do it just before going to bed. There is no practice more objectionable than to go to bed closely wrapped up in the dust and dirt that accumulate on the surface of the body during the day; nor is there anything I know so conducive to sound sleep as a tepid douche just before getting into bed. I have many times

known bad sleepers become the best of sleepers from the adoption of this simple rule. If the body be well sponged over before going to bed, the morning ablution—though it is still better to carry it out—need not, of necessity, be so regular. The face, neck, chest, arms, and hands may be merely well sponged and washed in the morning.

It can do no harm, nor will it uselessly take up space, if in this place I digress for a moment to enforce still more earnestly the importance of making this matter of cleansing the body a habit of life from the first of life. I would impress on mothers and fathers, and on all who have the command of youth, that this practice should not only be commenced at the earliest period—from the first infancy—but should be steadily maintained, so that the subject of it shall attain the desire for it and feel the necessity.

I notice it to be a common plan for mothers of the best sort, who feel it almost a crime to omit washing a baby morning and evening, to begin to omit the same process as soon as the child learns to run about and to become, to a certain degree, self-dependent. It is no doubt an irksome daily task for the mother of a large family to see that every little boy and girl is washed from head to foot every morning and evening. Still the result is worth every penny of the labour.

In the Industrial Schools at Anerley, the waifs and strays of child society, the worst-

born specimens in the matter of health, are so quickly brought into conditions of good health, that, as Dr. Alfred Carpenter once remarked to me when we stood in the midst of the children, "they seem to teach us that not even a generation of change is required to wipe out a generation of defects, when personal health is well looked after."

There is all the richness of truth in this wise observation, and I am fully justified in saying that amongst the many agencies by which the able managers of these Industrial Schools do so much for the health of the children, there is not one agency more telling than the persistent and regular, but at the same time, perfectly simple method of ablution, which is followed in this establishment.

Practically, the system is one which might easily be carried out in every household. There are no cumbersome baths, but a series of taps at which the children can cleanse themselves from the crowns of their heads to the soles of their feet as quickly as they can wash their hands and faces in the lavatories of many other institutions in which children and youths are received. These children at Anerley grow up in the habit of ablution, and when they leave the school they are, by the habit, made fifty per cent. more cleanly than the majority of children who are brought up in better circumstances, or even in luxury.

BATHROOMS.

While the easiest, readiest, and cheapest of baths have been carefully described above, in order that the pretence or excuse of difficulty in getting a bath may be removed, I have no intention of passing over in silence the bathroom of the comfortable house. Whoever can afford a bathroom should have one, and many a house which is richly and expensively furnished in other respects is deprived, unjustly for health's sake, of its bathroom. Let us therefore study the bathroom with a little care.

The bathroom is best situated on the third floor in four-storied houses, that is to say, on a level with the chief bedrooms, and below the attics. A good bathroom ought to be ten feet wide, ten feet high, and twelve feet long. The floor should be of oak or pinewood, smooth and well laid. No carpet is required for the floor, but one or two perforated india-rubber mats are of advantage. The walls of the bathroom should be painted in hard paint that can be washed and thoroughly dried, or they should be covered with tile-work, which is at once clean and effective.

The bath, which need not be large, should always be constructed of earthenware, or of iron, lined with porcelain, and it should be quite flat at the bottom, so that it may be easy to stand upright in it while taking a douche. The well-constructed bath should be supplied with hot

and cold water; the temperature of the water used regulated by the rule of 65° Fahr. in summer, 70° Fahr. in spring and autumn, 75° to 85° Fahr. in winter.

The bathroom should be thoroughly well ventilated and warmed. I know nothing that answers better for warming it than the stove, of which a description has been given in a previous chapter.

SIMPLE HOT-AIR BATH.

To those who wish for the further luxury of a hot-air or Roman bath in their houses, it is a comparatively easy matter to arrange the ordinary bathroom so as to make it, when required, a hot-air bath. This can be done in the simplest way by introducing into the room a stove heated with coal and constructed, in a large size, after the manner precisely of the Calorigen. The air in this case is let into the room from the outside by a three-inch pipe, and is allowed to escape from the stove, after it has been heated, by a pipe of a similar diameter. With a good, ordinary-sized fire in the closed grate of the stove, the air in the room may be brought up to the temperature of 140° Fahr. in a period of from twenty minutes to half an hour, provided that the space to be warmed does not exceed twelve hundred cubic feet, that the door be well closed, and that the outlet from the heated air at the upper part of the room be so arranged that it can, at pleasure, be

reduced until it is not above twice the size of the opening for the entrance of the air from the stove.

For a sick person to whom I thought the use of a hot-air bath would be very useful, I once turned an ordinary bathroom into a hot-air bath in this way with great readiness, and with the best effect; and since the time when that was done, I have repeated the same with results as satisfactory. It is true that the temperature is limited in range in this form of hot-air bath, but for most purposes it can be raised to a sufficient degree, and as the hot air can be shut off at once, and the ventilator enlarged at pleasure, it is easy to cool the room rapidly down during the after process of the douche or the water-bath.

For those who have the means, and who are building a new house to be replete with all modern contrivances, the properly constructed hot-air bath should be always introduced in connection with the ordinary bathroom. The Romans, who once inhabited these islands, set us a splendid example in this respect in their habitations. With them, the hot-air bath seems to have been as much of a household necessity as the kitchen; and it is right to admit that by this care they expressed practically a degree of sanitary knowledge which bears imitation at the present hour.

In this cold and damp and variable climate, the Roman bath in the house is of more im-

portance than it would be in warmer and more equable climes, for here it is less of a luxury and more of a necessity. If, in our heavily fogged London atmosphere, the tired Londoner after a day of oppression could return home, and for an hour before dinner indulge in the light and genial and clarified air of a Roman bath, he would do more to relieve his congested and enfeebled internal organs than by any other process that is obtainable. As it is, he is led too often to seek a false and partial relief from his oppression by resorting to some stimulating drink, which first elates, and, by too frequent repetition, paralyzes, injures, and kills him outright. In a word, he smothers his afflictions, while in the Roman bath he would disperse them and drive them away.

In saying so much in favour of the Roman bath, I am, I know, offering some slight correction of what I spoke on the subject five and twenty years ago, when the hot-air bath was being enthusiastically introduced into this country by a few of its over-earnest advocates. To me it seemed at that time as if the advocates of the bath were claiming it as a panacea for all maladies, and were fain to declare that to its efficacy outdoor air and bodily exercise might well be sacrificed, and a slothful luxury take the place of a hardy, healthful existence.

It is but just to state that certain of these advocates did go even to this length, and that I and others, thereupon, went perhaps too far

the other way in our criticism of them, and so checked a useful measure while it was new, and before it had taken root.

If I did wrong in that way, I recall it now. Holding as firmly as ever the view that the hot-air bath should never take the place of healthy exercise of body, nor of active outdoor life in good and wholesome air, I am satisfied, from a larger and longer experience, that the Roman bath is an addition to the English house which should never be ignored when circumstances admit of its introduction. Last winter, in the treatment of a number of persons who were under my medical care, I would have given anything for the advantage of being able to remove them, under their own roofs, into a well-constructed hot-air bath.





CHAPTER XVII.

THE WATER SUPPLY OF THE HOUSE—THE CLOSET FOR THE WATER-TANK.



IN our modern houses, in towns, where there is no constant water supply—where but one supply of water in the course of the twenty-four hours is allowed—and where the water has to be stored in large cisterns, we find the bedroom floor of the house the common situation in which the closet for holding the water-tank or cistern is placed. For the purposes of supply, mechanically, no position probably could be better, but, unfortunately, the little amount of room in the town house suggests the temptation to make the cistern-closet a centre for all sorts of improper commodities.

On the top of the cistern is laid, frequently, various household implements for cleaning, and

other articles which are stowed away to be out of sight and, practically, out of mind. On one occasion I found, on making an inspection of a water-cistern in a large house, a number of bunches of long, thick bristles, evidently from a brush that had been used for scrubbing purposes. On inquiry it turned out that they came from a round brush which was used for cleansing the adjoining water-closet. The brush, when it had served its purpose, was placed by the housemaid upon the lid covering the water-cistern, and through a wide joint of the lid the broken bristles or rods of the brush fell through into the water below. This water, so seriously and thoughtlessly contaminated, supplied all the bedrooms with water, and also supplied part of the lower part of the house with drinking water. I name here one of the impurities that may steal into the water of the cistern, but this does not include all. Sometimes accidents happen in the cistern-closet which are unexpected, and which do not declare themselves until a fault is disclosed by the water after it is drawn from the tap. I once had a proof of this in a curious way. Some water drawn from an upper cistern in a large house presented a muddy or filmy appearance, and soon afterwards gave an earthy taste. On inquiry it was discovered that a leakage in the roof of the house had caused water to run down the wall at the back of or over the cistern, and to carry into the cistern lime-wash from the wall, which, floating in part

on the water, and adhering in part to the sides of the tank at the water-line, had become coated with fungous vegetation, and had rendered the water not only disagreeable but actually impure.

The cistern sometimes becomes a source of impurity from another cause, which is more offensive still. The cistern is occasionally contaminated, either thoughtlessly or accidentally, with decomposing dead matter, and so an abominable contamination is produced. A medical friend from a northern city, who was staying at one of our large hotels a few years ago, asked me to luncheon with him at his hotel, and knowing me to be a water-drinker, apologized for the water, which, said he, as he quaffed his glass of ale, "I wouldn't touch; because I would rather be poisoned with beer in the long run than with water in the short run." The water truly was offensive, even to the sense of smell. Detecting this so distinctly, I sent for one of the superintendents and explained that such water could only come from a cistern polluted with dead animal matter. The evidence was too certain to admit of dispute, and an inquiry was instituted at once. On opening the cistern the odour was poisonous, and the cause for it, fully exposed, was found to be the remains of a dead cat, which lay decomposing at the bottom of the tank. The animal probably had fallen in, and, unable to regain a footing, the water being low, had got drowned, and remained unnoticed

until the products of decomposition made the circumstance known.

The closet holding the water-cistern is usually supplied with a sink, down which the slops from the bedrooms are too commonly poured. The closet is dark, the sink is emptied of water slowly, the sink is kept clean with the utmost difficulty, and from it there arises, unless scrupulous cleanliness be insisted on and daily seen to, a most disagreeable odour. The closet is not ventilated, as a rule, and so soon as the door of it is closed securely, the small space has its contained air quickly turned into foul air. That foul air easily spreads through the open chinks into the cistern itself, and in this manner the water comes into contact with the gases of decomposition, by which another source of impurity is added. From the same emanations, again, the air in the rooms adjoining the cistern-closet is apt to become contaminated.

It will be seen, now, how necessary it is in every household to pay special attention to the closet that contains the water-tank. This closet, first of all, should never be allowed to contain any household implement or vessel that is not perfectly clean. It should be so free that the lid of the cistern can be opened without a moment's hesitation. Its walls should be washed or distempered frequently. It should have a ventilating tube carried from its ceiling through the roof or into a chimney; and it should, if possible, be lighted by a window,

even if the window be into the staircase. The sink should have the freest opening for the flow of water that may escape from the tap, and the sink should never be used for the purpose of receiving the slops from the pails that are used in the bedrooms. Lastly, the sink should be systematically cleansed, so that there is in it no accumulation of dust or dirt of any kind. I need hardly add that the slop-pails should never be allowed to remain in the cistern-closet, but, as they are often left there, the advice is necessary.





CHAPTER XVIII.

THE WATER-TANK.



OR the tank, slate is, I think, the best material ; after that comes galvanized iron, and next to that lead. The worst form of cistern is the wooden one lined with zinc. Every cistern should hold a carbon filter, which should often be changed, and the cistern should be frequently inspected to see that it is quite clean, and contains no deposit. It is excellent policy, once every month or six weeks to allow the cistern entirely to empty of water.

The consideration of all these facts in relation to the storage of water in cisterns within private houses brings us to a decisive instruction ;—namely, that no effort should be left undone where dangers from water supply exist,

until they are removed by the replacement of stored water for a continuous supply of water having a common and pure source. The storage or tank system has been the cause of endless mischiefs in houses from mere overflow and from injury done to walls, ceilings, and furniture. But these, obvious and costly mischiefs as they are, are trifling when compared with the insidious dangers which the storage system engenders. In every city or town where water is laid on, it would be good and economical practice for all persons, poor and rich alike, to support the constant system of supply, to permit no storage of water in the house at all, and to take all that is required direct from the main.

Whenever this is done, there is saving in every direction. There is saving in regard to the quantity of water used. As a rule, we may say that each person ought to have, for all purposes—for cooking, for washing up the crockery of the house, for washing the floors, for flushing the drains, for baths and hand-basins—ten gallons of water per day. With water supplied on the constant plan, from a sufficient source, this quantity can always be secured. With the cistern plan there cannot be any such certainty. The cisterns run over, they leak, they lose through the waste pipe, they get frozen up in the winter, they intermit in the summer. In some places, under these very bad conditions, two and three times the

quantity of the water actually required is lost, whereby the cost of water, which ought to be as cheap as air, is made into an important item of household expenditure. This is one source of waste, but is trifling compared with another. The cistern sometimes becomes a cause of disease. The water in the cistern, under such unfortunate circumstances, may be charged accidentally with poisonous matter by which fatal diseases are spread. Then from the water in that cistern the poison is communicated to those who take the water. Then, also, disease may spread by means of water that has been used for adulterating milk, or for washing up the vessels in which the milk is kept, or in which it is sent out, so that the milkman may get the credit of evil which really belongs to the water.

In the cholera epidemics of London the distribution of that disease by the water supply has been found to be one of the most common and the most extensive, the danger being largely increased by storage in the cistern or tanks of the household.

The worst and most frequent examples of mischief have occurred in regard to the disease known as typhoid fever. In one instance in which I had to make an official report respecting an outbreak of typhoid fever which had swept off a large number of people, the cause of the outbreak was traced to one milk-shop. In the house connected with the shop in question, the cistern holding the water was placed

directly under the water-closet. A person suffering from typhoid fever in this house was confined to a room adjoining the closet, and the fluids from the bedroom were poured down the closet. The fluids found their way into the water in the cistern; the water in the cistern was used in the milk-shop below, and in this way the water, mixed with the milk, became the source of the epidemic which killed many persons, caused serious panic in the town, and brought the town into great discredit.

Let it, then, be a rule to do away with the cistern whenever it can be done away with. If it is impossible to do away with it, let the utmost care be taken that the drinking supply of water for the household be entirely cut off from the supply that goes to flush the closet.

Let it be remembered at all times; let it be told by all persons who have learned the truth, to all who have not learned it, that a house which has its drinking water in connection with the supply to the water-closet, is an unsafe house, and that it is almost a miracle if disease does not break out in it.

No company, conducted on safe commercial principles, would insure such a house against disease at any reasonable rate or risk.



CHAPTER XIX.

WELL AND SPRING WATER—PURIFICATION OF WATER, AND WATER SOFTENING.



IN some places there is no other source of water supply than the well or the running stream. It is therefore very important that when one or the other of these supplies are wanted, there should be the utmost care that there be no pollution at the prime source.

The well has been a very common cause of disease. From the oldest times the bad water of dirty wells has been the distributor of the poisons of some of the most fatal and spreading diseases. Thus some oppressed peoples have been accused of poisoning the wells, and in times of pestilence have been persecuted on the accusation in the most cruel and wanton manner.

In the great outbreak of cholera in London in 1854, there occurred a violent epidemic round and about Broad Street, Golden Square. The late Dr. Snow, whose researches on cholera were amongst the most important of the century, traced that the source of the evil was a well, connected with a then famous pump, called the Broad Street pump.

On inquiry it was found that a person suffering from cholera had been brought to an inn near the pump, that the fluids passing from his body had been cast down a closet which poured its contents into a sewer near the well, and that coloured fluids thrown down the closet, passed through the wall of the sewer into the water of the well, thus showing a communication between the closet and the well.

In tracing out the history of the cases of cholera in the affected district, it was soon discovered that the greater number of the sufferers were those who had partaken of water from that infected supply.

I could give many more instances of a similar kind to the above, but this is quite sufficient to explain of itself the danger of bad water from a well.

Whenever, therefore, it is absolutely necessary to drink well-water, the utmost care should be taken that no cesspool or other source of impurity should be near the well; that no drain should run by the side of it; and, that the soil above it be well bricked for a distance round,

in order to prevent impure water percolating into the well.

The well itself should be kept clear and clean. If it be so shallow that the bottom of it can be reached by an ordinary ladder, the basin at the bottom, made of sound brickwork, should be kept in good order under regular inspection. Should the pump which brings up the water be disused for a long time, it should not be allowed to supply water for drinking purposes until the water contained in the well has been effectually exhausted, and a new quantity supplied from the prime source.

The pipes which convey water from the well, or from any other source, require study. As a common practice, leaden pipes are used. They are safe if the water is moderately hard. They are not safe when soft water is used. Soft water so acts on lead that it bears lead with it in the soluble form, and the lead, entering the body of the person who drinks the water, may produce lead colic, or lead paralysis—palsy usually affecting the hands, and giving rise to what has long been known as “wristdrop.” About sixty years ago a well-known English town was severely affected by the accident of receiving water contaminated by lead. The water was laid on to the town by a new system of leaden pipes, and an immense number of persons suffered before the cause of the disease was discovered and removed. Lead, be it then remembered, should never be used when the

water is soft, and specially it should never be used if rain water is the water supplied for use. On the whole, iron pipes answer well for the conveyance of water whenever it passes in large quantities into a house, but earthenware pipes are still more commendable.

Whenever there is any fear that the water supplied to a house contains organic impurities, the best plan for avoiding the danger is to boil the water, let it cool, and then filter it through charcoal. Water treated in this way may be considered, practically, safe.

It is always good to have a filter in every house for water, and the construction for such a filter, given in the "Guild of Good Life," cannot, I think, be improved. It is made as follows:—Get a four-and-a-half-gallon barrel, into which you can fit a tap. Into this barrel, four inches above the opening for the tap, put in a false bottom of wood, perforated with a large number of small holes. Then lay on this false bottom three inches of fresh-burnt charcoal.

The filter is immediately ready. All that has to be done is to fill the barrel nearly to the top with water from the tap that supplies the house. The water will soon begin to run through the charcoal quite clear and bright. If at first it looks a little dark, put it back into the filter and continue to change it until it runs perfectly clear.

It is well to take the trouble to make all the

holes in the false bottom which supports the charcoal with a long iron skewer, made red hot at the point. When all the holes are bored, char the false bottom all over before putting it into the filter. This forms a still better filtering bed. It doesn't cost much trouble, and it makes the job more complete.

Varnish up the outside oak colour and surround it with brass hoops. This filter looks quite nice and bright on the sideboard.

Every month clean the filter out, remove the charcoal, and put in some fresh, taking care not to throw the old stuff away. Put the old stuff by the fire in a pan to dry ; afterwards make it red hot, so as to purify it, and it is ready for use again.

Any working man can set up such a barrel as is here described.

SOFT WATER.

It is always useful to catch rain water, to filter it into a cask and keep it for washing clothes, and, if there be plenty of it, for washing the body also.

When rain water cannot be got, it is easy and cheap to soften water as follows :—

Make a quantity of lime-water by adding nine ounces of fresh-burnt lime to forty gallons of water. It is essential that the lime be freshly burned. Unless the lime be well burned, it will not dissolve. Label this "Lime-water." It is very easily made.

Take some of the hard water, put nine pints of it into a separate vessel, and add to it one pint of the lime-water. In a little time the whole of this water will be quite soft and clear, with a layer of white chalk at the bottom.

If you want to do this on a larger scale, follow Mr. Hallett's plan of having a two-gallon stoneware cask. Into that put one pint and a half of lime-water, and afterwards fill up with the hard water. When the cask has stood all night, you have soft water which can be drawn off by the tap.

In some places—Canterbury is one good example—all the water of the place is treated in this way, and everybody can be supplied with soft water for domestic purposes. The saving of soap is enormous. Here, from Mr. Hallett's paper, are the figures :—

“One hundredweight of quicklime will do the work of twenty and a quarter hundredweights of soap.

“The cost of one hundredweight of quicklime is eightpence, the cost of twenty and a quarter hundredweights of soap is £47 1s. 8d. The saving is £47 1s. 0d.”

Such saving is worth a good deal to working people. And, at the same time, the water is improved for drinking purposes, and for making tea and coffee.



CHAPTER XX.

THE STAIRCASE LANDING.



E must not leave the upper rooms without referring to the landing of the staircase. This space is, as a rule, a terrible trouble to the sanitary mind. It is a stage on which varied kinds of sanitary difficulties combine. It often is deficient in light. On it is placed the receptacle—necessary, but fearful—of the housemaid's cupboard or closet. On it is placed the sink and water-butt. Worst of all, in nearly every town house, it is a place for a water-closet.

The floor of the landing should be treated in the same manner as the floor of the bedroom. In the course of the tread in the centre of the landing, for a width, say, of from eighteen inches to two feet, a line of carpet may be laid

down, but the floor space on either side of the carpet should be uncovered, and, if it be of wood, it should be scrubbed and treated with wax and turpentine when the boards will allow of it. Where the staircase and landing are of stone, nothing is more healthful than the stone itself, duly cleaned and whitened. When the floor surface is of indifferent wood or stone, it may, with advantage, be covered with oil-cloth, and the centre carpet. In no case should the whole of a landing be carpet-covered so as to make the carpet hug the wall. A floor covered in that manner holds the dust, and keeps the air charged with dust; every step and every gust of air that moves the carpet from beneath tends to waft some particles of dust into the air above.

Of oil-cloth as a covering for landings, passages, and outer parts of bedroom floors, nothing can be said that is unfavourable, granting always that it is laid down with skill and care. As a rule, it should be closely fitted to the floor, and well glued and nailed down at the edges, so that it cannot become a covering for a thick layer of dust beneath it. Fixed firmly in its place in such a way as to form part of the floor itself, oil-cloth can be cleaned with as much facility as can a boarded floor, and can be waxed as perfectly. It does not retain dust; it shows the presence of dust and dirt, and it is a good non-conductor of heat. The substance called linoleum is, in some particulars, an in

provement on oil-cloth, because it is a better non-conductor. Kamptulicon is more enduring than either, but it does not admit of such perfect cleaning ; it catches the dust more, and it never looks so bright and cheery as the others do. We are told that it is so much more serviceable, and that is true ; but then it is not good to have for ever in view a structure that is unchangeable and practically indestructible. An occasional change of pattern is a positive relief, and when it can be obtained at slight cost is a useful luxury.

The walls of the landing, like those of the bedroom, should be covered with a paint or paper that will readily admit of being washed. Failing this, they should be distempered.

THE HOUSEMAID'S CLOSET.

The housemaid's closet, as it is usually called, is a receptacle on the staircase landing that requires very particular attention. This closet is often the *omnium gatherum* of the upper part of the house. Here is likely to be found the bag or basket containing the unwashed linen ; here are often brushes and dusters, and various other paraphernalia for the cleaning processes. It is not to be supposed that so important a place as the housemaid's cupboard can be dispensed with, but it should never be neglected or treated as an out-of-the-way nook, into which anything may be thrust that has to be put out of sight, and which may or may not be cleaned

and purified. Because it is the *depôt* of so many articles which are used for cleaning, or are waiting to be cleaned, it ought to be the more carefully protected against uncleanness. It should therefore always, when it is possible to have the light, be lighted by daylight; it should have the ventilation of the best kind that is procurable; it should be repeatedly emptied of all its contents and thoroughly washed out; and its walls should be distempered once a year, whether they seem to require the process or not. In a properly ordered house the housemaid's cupboard should be emptied of its contents once a week as a regular system, and all the things that are stowed away in it should have their proper place.

ASCENDING VENTILATING SHAFT.

It is always good practice, wherever it is practicable, to make an opening from the stair-landing into, and out of the roof of the house, or into the stack of the chimney. If the landing be just under the roof, then it is good to get a direct opening through the roof and the cock-loft leading to it, so that there may be an immediate communication with the outer air above. In most houses the upper landing-place is connected by the staircase with the whole of the lower part of the house. The house from below ventilates into it, and if upon it there be no efficient outlet it is in a bad position indeed.

Should there be an intervening floor between the landing and the roof of the house, a small shaft should be carried up, and beneath that shaft a gas-burner may with much advantage be suspended, so as to make the shaft a chimney for the conveyance of the products of gas and of bad air from the interior of the house.





CHAPTER XXI.

THE KITCHEN.



WE have now to descend to the lower regions of the house, and to consider those rooms in which the daytime is spent and in which food is prepared.

Those who can afford it will always do well to have at command a sitting-room, or parlour, as well as a dining-room ; that is to say, a room in which to sit, but not to eat. It is more than a mere luxury to be able to read and write and talk in an apartment distinct from that in which meals are taken. There is always in a dining-room the odour of the dinner or other meal for some time after meals, and unless the room be well ventilated, that odour long remains, rendering the air, after some weeks of use, very impure. Do what you will, there will escape from food, while it is hot, some

organic particles borne by the vapour that goes off from the dishes. These, mixing with the air, load it with matters which decompose, and in close dining-rooms yield an unpleasant odour. No doubt people who live in such an atmosphere get in time accustomed to the odour, and so fail to notice it; but a stranger is soon aware of it, and finds it uncomfortable and oppressive. This subject is so important that I ask for it special attention, and I would recommend those who have but two rooms, namely, a kitchen and one sitting-room, to prefer to make the kitchen the dining place rather than lose the parlour. There is nothing out of the way in taking meals in a nicely arranged kitchen. Indeed, it is very homely and often very convenient. The fire is good, the food is readily removed from the fire to the table, the plates are easily kept hot, and the conveniences for clearing of the table are great. Moreover, after the meal is over the kitchen is easily ventilated, while immense saving takes place from the housewife having everything under her direct control.

By a kind of natural step in our way from the upper to the lower part of the house, we have got into the kitchen; and being there, we cannot do better than settle what kind of a place it should be in a properly ordered and healthy dwelling.

In my model city I suggested that the kitchen should be placed at the top of the house, and

there are many advantages in having it in that position.

With the kitchen at the top of the house plenty of light is easily obtained, and this is most useful; plenty of air is also obtainable, and that, again, is equally important. From the boiler warm or hot water can be distributed over the whole of the house—another great convenience at all times and seasons; in waiting, the heavy dishes are carried downstairs, to the dining-room below, and the lighter emptier dishes have only to be carried up; lastly, all smell of cooking is avoided in the house—a decided advantage. Unfortunately, in our houses, as they are at present built, it is impossible to have the kitchen above the living-rooms, because there is not ready access to it in that position. We are, therefore, obliged to find it anywhere, and often in the very worst place for it of all, namely, the basement.

Wherever it is placed, the kitchen should be fitted up with every care. The following are essential parts of it.

1. It should be thoroughly lighted, so that the cook may be able to see everything that she is doing.
2. It should be so perfectly ventilated that no smell of cooking should be noticeable out of it, and very little in it.
3. It should be supplied abundantly with hot and cold water.
4. Its walls and ceiling should be coated

with a substance that is easily removable or cleansable, that will not absorb moisture, and that will not hold dust.

5. Its floor should be made of a material which will not absorb and retain moisture or grease, to which dust will adhere, and which will admit of ready application of the broom and the scrubbing-brush.

6. The furniture in it, chairs, tables, shelves, should be such as can at any time be cleaned with soap and water.

7. There should be in it every convenience for conveying away kitchen refuse; but no closets, cupboards, corners, tubs, or pails, in which kitchen refuse may be stowed away or concealed.

8. There should be sufficient shelf room to enable all articles of crockery and metal to be spread out so as to be visible and easily reachable.

9. There should be a good dresser with clean drawers for knives, forks, spoons; but into these drawers no things ought to enter which are used for cleaning, such as dusters, dish-cloths, brushes, and the like.

10. There should be a good and economical range for warming and cooking food.

In these directions there is included a general outline of the requirements of a good kitchen. All that is suggested may be very inexpensive, and, indeed, there is no part of the house that calls for less expense. Moreover, the kitchen

need not be particularly large if it be kept orderly and cleanly.

The young housekeeper ought to be proud of her kitchen. She ought to look upon it as the part of the house which must never be dirty, and which must never be the receptacle of the refuse of the house. It is not often so. To "send to the kitchen" things that are to be put out of sight; to use the fire for all sorts of purposes—drying of damp coats and shoes; to use the kitchen-table for clothes-brushing, knife-cleaning, and shoe-cleaning;—these and many more such jobs are carried out in the kitchen, all of them bad, out of place, and unhealthy.





CHAPTER XXII.

ESSENTIALS FOR THE KITCHEN.



IN the kitchen the grand essential is light. If light be abundant, if it pass into every part, there will almost certainly be cleanliness and purity in every part. If light be absent, if artificial light has to be employed to supplement sunlight, it matters little what care may be taken, the place will never be thoroughly clean.

I have visited a house where the whole of the arrangements are on the most comprehensive scale, where money is no object, where the most skilful assistance is sought and obtained, where work is always in progress, where the strictest order and system are carried out. The best that can be done is done, but the best is a poor effort compared with what might be done; and all the difficulty lies in the bad

lighting. There is no direct sunlight, for all is underground, and even when the gas is on in full blaze there is a dark shadow somewhere. In such a place the refinements by which the art of cookery is made into a science as well as an art are out of the question. The best cook cannot see in gloom, and accidents are necessary evils, unavoidable and annoying. When there is accident there is delay, when there is delay there is loss of material; and when these two faults are enforced by a bad system, there are constant vexation and unnecessary trouble. More than this, the attendants are not comfortable. They bear on their faces a settled gloom, which is but a reflex of the place in which they labour. In a dark kitchen there must of necessity be five enemies to the householder.

There must be waste.

There must be uncleanness.

There must be bad order.

There must be bad cooking.

There must be bad health.

I say no more on this head. When the kitchen is well lighted, there are many other requirements which have to be thought of carefully, in order to make it a model of which the housewife may be proud.

VENTILATION.

Good ventilation is specially necessary in the kitchen, and this is best secured by bringing

the air into it from above. A shaft for conveying air from the top of the house to the basement is of immense value to a kitchen placed underground. This not being practicable, the plan of bringing in the air from the outside, through an opening near the ceiling, is best, and the Sheringham valve answers, as a general rule, very well indeed. In fact, I know of no place where this valve answers better than in the basement kitchen. The air which enters by it is rapidly diffused through the upper portion of the room; and if due provision is made to carry the air away, the place is kept free of odours from the cooking that is going on below, and at the same time cool.

To convey the air away advantage has to be taken of the chimney shaft, and in the kitchen, where there is usually a fire at all times, there could be nothing better unless some extremely complicated apparatus of a strictly mechanical kind were introduced. I have seen attempts made at securing pure mechanical ventilation, but even when these have been tolerably successful, the trouble and cost have interfered with the continued success. On the whole, therefore, the chimney shaft is the natural pull for the air that ought to be removed.

The shaft may be utilized by means of an Arnott valve, which, when correctly balanced, answers well. Or one of the syphon ventilators of Dr. Ancell Ball may be used with effect; or one of Kite's ventilators.

I devised myself a form of cheap ventilator, which was constructed for me by Messrs. Ewart and Sons, of Euston Road, and which answers well. A box, made of sheet iron, twelve inches high, four and a half inches broad, twelve inches long, and open at both ends, is passed into the chimney through an opening cut near to the ceiling. The box is fitted into the opening hand-tight, and is cemented to the wall in front by a thin layer of cement. It establishes a free opening between the room and the chimney. Next, a piece of three-inch stove piping, two feet long, and closed at the lower end, is passed through the box into the chimney, and raised up into the chimney from the lower level of the box. The tube is open at the side at the part where it is in contact with the box, and is made to fix by a hook into a broad groove at the back of the box. The air of the room passing into the box traverses the iron tube, and goes up with the air from over the fire into the chimney shaft. So soon as the iron piping becomes warm, this current or draught of air commences, and is very sharp indeed, so that a back draught of smoke from the chimney is not occasioned. To prevent soot from falling into the tube a conical and raised cap is carried over the mouth of it. When the chimney is swept, it is quite easy to put the hand through the iron box in the wall, unhook the pipe, bring it out, clean it of any adherent soot, and, after the shaft is

cleansed, replace it. But really it is not requisite to remove the pipe, for, in sweeping, the brush passes it very easily.

Whatever the means employed, the two great aims to be had in view are, to let in air at the highest point from the outside of the house, and to get the air away by the sharpest possible current through the chimney shaft.

If there be gas in the kitchen for affording light, it should always, when possible, be utilized for ventilation. This serves a double purpose; it carries off the products arising from the combustion of the gas itself, and it removes the other products of a vaporous character which require to be carried away. To make the gas serviceable as a ventilator, it is necessary to connect the burner indirectly with the chimney flue; a plan which can be carried out readily, when the burners are in the centre and are suspended from the ceiling, by having them overlapped by a large funnel, inverted and connected, by a length of connecting pipe, with the chimney shaft.

Dr. Chown was accustomed to make use of the gaslight for ventilation by causing a draught over the flame into the shaft, whenever he could place two good burners by the side of the fireplace. He carried his so-called syphon tube from the upper part of the room, on each side of the fire-grate, down to the level of the opening from the fire into the chimney. At that point he turned his tubes into the

chimney, with the result of getting a strong down-current, even when there was no fire. To remove the products of the gas, he connected the globe at its lower part with the syphon tube by means of a cross tube, and then, when the fire and the gas were alight, there was a current of air over the gas-flame into the chimney. I saw this plan in operation many times, and it is so efficient and so steady in its action, I have often wondered that it has not been more generally adopted.





CHAPTER XXIII.

KITCHEN FIRE.



KITCHEN constructed to meet all the requirements of the house ought to be the place where much of the heat that is required for the house is saved and applied. If we could have all our kitchen ranges so planned that at the back of the range there was a large chamber for receiving fresh air from the outside and distributing it over the house, the heat which is now allowed to pass away along the chimney shaft and so to be lost would be largely economized. It could be delivered through properly constructed shafts into the rooms above, and in some houses might be depended upon for the whole of the heating purposes during eight or nine months of the year in a good part of England. This application of heat, so economical and simple,

is as good for small as for large houses, because, in point of fact, the size of the kitchen fire, as it is determined by the size of the household, determines the distribution of heat throughout the house. In other words, a small fire will warm a small house, a large fire a large house, and although the advantages are greatly in favour of the small house, they are not to be despised in a house of any dimensions. The plan has been tried in a few cases and has answered exceedingly well. It has not yet become common, because there is still a difference of opinion in respect to the most practical means of carrying it out. Dr. Balbirnie, of Sheffield, would make the air-chamber of brickwork, as if it were a part of the building, letting the fresh-air tubes empty into it; would partly enclose the kitchen range in it; and would let the exit tubes for the escape of the warm air emerge from it into the dwelling. I can imagine nothing simpler than this suggestion, and if I were building a new house I would carry it out, not only in the kitchen, but in every fireplace throughout the house. The other suggested plan is that of affixing a large iron box in connection with the grate at the back part, of letting the fresh air stream into the box to be warmed, and of letting the warmed air pass out into the rooms for which it is destined. For houses already built this last is the best method; but we have not, I think, as yet, a cheap range of the kind for the use

of the kitchen. Invention has still its part to play in this direction.

KITCHEN RANGE.

Apart from the utilization of the heat, there are now so many good kitchen ranges, it is difficult to state which is the best; and though I have seen eight which are most commendable, I could not, in fairness, name one, each being, in its own way, excellent. I prefer, in a few lines, to state what are the qualities most desirable in a range required for ordinary domestic use.

It should have facility for an open or closed fire, so that roasting or grilling may be carried out at pleasure. The size of its fire should be regulated, not by lateral expansion and contraction, but by a grating movable from below upwards. It should consume its own smoke.

It should have a large oven with circular revolving shelves, and a cover at the top with a lidded opening, so that cooling may be accomplished without opening the door.

It should be furnished with a plate-warmer beneath the oven.

It should be furnished with a good boiler, that can be filled by cistern supply regularly, or, if occasion require it, through an opening at the top.

It should be furnished with one or more supports over the fire for the kettle or saucepan.

These are the necessities of a really perfect range, the size varying according to the house for which it is intended. Such a range as described is meant for the consumption of coal as fuel, but it seems to me that in the construction an arrangement could easily be introduced by which at any time either gas or coal could be employed as the fuel. With the present price of gas it would be impossible to hold to gas all the year round, but in summer-time gas would probably be found, in most families, the cheapest as well as the cleanest heat-producer.

In the kitchen it is bad to have sinks for washing-up purposes, because it is important to keep the air free of water-vapour; but if a sink be absolutely necessary, one of enamelled iron is the best. There ought to be no drain from the kitchen into the drain-pipe or sewer. There ought to be no receptacle in the kitchen for vegetables, broken food, nor for any kind of waste stuff.





CHAPTER XXIV.

THE SCULLERY.



HE word "scullery" too often conveys an impression, and a truthful impression too, of a place which must of necessity be uncleanly, and a place which may be situated anywhere so long as it is near to a kitchen. This is great perversity and great ignorance, for a scullery is the part of the house from which the things which require to be cleanest of all should issue. But how can a dirty place send out cleanliness? Impossible; as well expect grapes of thorns, and figs of thistles. In the scullery all the utensils for cooking and cleaning have to be washed up, dried, and laid aside. Through the scullery all the refuse liquid of cookery and washing has to be poured away.

In order, therefore, that every piece of work which belongs to the scullery should be carried out in a wholesome and effective manner, the means should be present in it for good work. No room should be more carefully attended to, no room should be more orderly, no room should be purer. The following rules are all necessary in regard to the scullery.

1. Instead of being the dark place it usually is, it should be thoroughly open to the daylight, and should have its windows always clean. The light should fill every division of it, and the part where the darkest and, for a time, the dirtiest things are put aside should be the part where everything is best and most readily seen, because dirt and light are ever the keenest foes. It seems as if it were the only instinct of men and women to clean a dirty thing when they see it in all its dirt, and to leave it in its dirt when they only get an imperfect view of it in a shady or dark nook, corner, or hole.

2. The scullery should be the best-ventilated place in the whole of the house. This care should be specially attended to, because from the scullery, more than from anywhere else, bad smells will emanate if there be not an ample provision for the entrance and escape of bad air. The steam from the water used in washing up of pots, kettles, and pans that have been used must go somewhere. It will escape from the scullery directly out-of-doors, if it be allowed, and will be replaced by a new and fresh supply,

It will escape upwards into and through the upper parts of the house, and will only be replaced by other and impure air from the basement, which will, in turn, pass through the house, if it be not allowed to make its way directly into the outer air, and be re-supplied therefrom.

3. The ceiling and walls of the scullery should be always clean and white. For this purpose nothing answers better and nothing is cheaper than limewashing. Limewash gives a peculiar freshness to the air of the place; it throws back a full and clear light, and it is, of all methods of wall-cleansing, that which the least skilful as well as the most skilful can do. If the walls of the scullery be limewashed twice in the year, it is not one time too many, and on no pretence ought this process to be omitted longer than a year. The washing should be carried quite down to the floor, and between every shelf, as well as where the sides of the walls are most open for cleansing.

4. In order to carry the various utensils, the scullery is provided with shelves, which are from one and a half to two feet wide, and are one above another for about the height of three feet from the ground. The shelves should consist of good well-planed wood, with the joints closely fitted so that dirt and grease may not anywhere lodge and be held in the wood. It is not good practice to have the shelves painted. These are always best left in their

native wood, because they can then be kept white and clean by the scrubbing-brush, flannel, hot water, and soda. Soda-washing of these shelves should be a business of every month at least, and in the mean time they should never be left dirty. There is nothing sticks like dirt.

5. The sink of the scullery is all-important. The sink should be in a part of the room where there is best light ; it is often put in a corner or behind a door where there is least light, which is very wrong, for at the sink where the person who is washing up has to stand, the utmost facility should be afforded for seeing that all that is washed, is washed and rinsed thoroughly. The sink is commonly made of porous stone, and that is an entire mistake. Slate is better than stone for a sink ; but the best material of all is enamelled iron, with a dark outer and a white inner surface. There ought to be no hesitation whatever on this score in the choice of a sink. The iron shows stains and grease-spots and all impurities at once ; it retains what is spilled on it least firmly ; it absorbs nothing ; it does not crack if very hot water be poured into it ; it cleans like a piece of platter, and it wears excellently.

6. The drain from the sink should be of good size, and should go direct out of the scullery into the open air without any impediment in the way of trap or plug. On the outside it should empty its contents into an open

space or cavity, which should be in connection with the main drain of the house, but of course well trapped. On no account should the scullery communicate directly with the main drain. I have seen more contamination of the air of a house from such connection than from any other source, except the water-closet. Traps soon get imperfect; the sink trap is easily moved and as easily forgotten, and so the house is left constantly in immediate communication with a drain into which heated water is being poured many times a day to assist in distributing bad odours the more rapidly and freely through the building.

Various plans have been invented for catching the fatty substance which is poured down the sink of the scullery. I have tried several, but have never met with one that answered properly. I think, therefore, it is best to let the fat escape at once into the drain, and to keep the course always clear by the free use of common washing-soda and hot water. The soda in hot water dissolves the fat and carries it in solution into the sewer, whence it is borne away after it has again become solid.

7. Over the sink in the scullery there is what is called the drainer, or open rack, in which dishes and plates are set to drain. The drainer is usually made of wood, and if so made, it should on no account be painted or in any way coloured. But the best drainer is made of galvanized iron, and in a new house no other

kind should be set up. It is cheap, light, strong, and most cleanly.

8. The floor of the scullery should be of glazed brick, well fitted and so planned that any water that may fall upon it may be able to escape without for a moment accumulating in any part. If this be attended to, the scullery will never be damp; and a great saving to all iron and other metallic utensils will be effected.

9. In the scullery everything ought to have its proper place, the saucepans and other iron vessels in the lower, the earthenware on the upper shelves, and none should be put away until they are properly cleaned. It is astonishing how much time and labour is saved by the practice of instantly cleaning every vessel that has been used, so that nothing shall set hard on the surface. An instant rinse, even of a soup-dish or of a teapot, is the saving of a minute at least, and minutes, we know, make the hours.

10. The last rule I have to offer in regard to the scullery is that it must never be made the repository of remnants and scraps of food, such as bones, refuse of vegetables, and other putrefying substances. It is often so used, whereby it leads to tainting of all the things that are in common use for the cooking and holding of food. No practice is more mischievous, and the housewife who permits it does not deserve that honourable name.



CHAPTER XXV.

THE BASEMENT FLOOR.



THROUGHOUT the floor of the basement everything should be done to promote freedom from cold and damp. By a perversity that is unpardonable, it has been common to lay down this floor in flags or stone, and to let the flags lie directly upon the earth. The extreme coldness produced by this plan, coldness to the feet and lower limbs of the occupants, is lamentable in its results. If you go to the outpatient department of the dispensary or hospital of a large town, you will soon be surprised to find how large a number of the patients there are returned as suffering from two diseases, consumption and rheumatism. If you ask the life-history of these sufferers, you will be surprised again to find how many of them are

servant-maids, or persons following some similar position in regard to residence. If you go a step further to look into the cause of this, you will find that the grand promoting cause is living in a basement, the exposure there to the cold and damp, and to the close air. They are predisposed it may be to the málady from which they suffer, but it is lighted up in the place. If they are predisposed, it is, in fact, difficult for them to escape.

The practical lesson from these facts is, that the floor of the basement should be raised from the earth, and that it should be of wood—wood well seasoned, and well laid on sound, good joists. In building a new house, the space between the joists and the earth should be freely ventilated throughout its whole extent, so that the air, in whatever direction it be moving, can pass freely through from side to side, from back to front. If the warm air from the kitchen or other fireplaces can diffuse into this space, all the better; and from these fireplaces a draught should at all times be secured that will bring the air from beneath in steady current, and carry it up the chimney shaft.

In most houses already built there is no such protection as is here suggested, and as a rule it would be impossible to attempt the alteration. The foundations of the house would not permit of it, or, if they would, the expense would be too considerable.

These obstacles need not, however, prevent

one great improvement, which, though far from perfect, is as day to night compared with the damp stone floor. The improvement consists in laying down a good wooden floor on the stone flag, leaving a six-inch space between the floor and the stonework. This is really not a great expense, and when it is made in a uniform manner throughout a basement floor, it may be constructed without the intervention of steps or other inconvenience. It can also be so made as to produce a good ventilation over the whole basement surface. In laying down this upper floor, the stonework beneath should first be perfectly cleaned, and wherever it is faulty made good with cement, all irregularities smoothed down, and all damp places removed. An opening should then be carried through the walls leading from one room to another near to the flags, so that all parts of the basement may communicate freely, and air freely circulate over the whole surface. This arranged, communications can be readily made for causing a free entrance of air from the outside, and for securing also a free exit of air from the chimney shafts ; and, these things effected, the floor of wood may be laid equally, resting on good, well-seasoned joists, and raised six inches, or, if the height of the room will permit, twelve inches from the floor of stone underneath.

BASEMENT WALLS.

All the walls in the basement, whether in the

passages, the kitchen, the scullery, the pantry, the hall, or other room, should be coloured light, and should be coloured so as to be easily cleaned and renovated. Paper on the walls of a basement, unless it be of such a kind that it can be varnished and rendered capable of being washed at any time, should never be thought of, and as the putting up of paper in this way is a costly process and is really not necessary, it were best, I think, to set aside paper altogether.

The best of all coatings for the inner walls of the lowest part of the house, is a cement which becomes firm and smooth like parian. This, though expensive at first, is extremely durable, and as it can be washed like a dish or other piece of earthenware, it would hardly be surpassed. It has the advantage, too, of showing the damp places; for when on an impermeable wall water accumulates by condensation, and runs down in little streams, the evidence is certain that a current of warm dry air, with good ventilation, is wanted there. The objection to the cemented wall is, at present, its expense; and the same objection is open in respect to tiles and artificial stone.

In the absence of cement, distemper is an excellent substance as a substitute, and is by far the best wall-covering for a basement floor when it is necessary to combine cheapness with healthiness. It is a great pity that ever the custom of using distemper went out as

it did some years since, and it is a great advantage that there is a reasonable tendency to bring it in again with many improvements. We can now obtain coloured distempers that practically vie with paint, and that are as firm on the wall, when they are properly put on, as can possibly be desired. The best specimens of distemper I have ever seen are made by the Messrs Mander, of Wolverhampton. The colours are admirably chosen, the substance is brought to an excellent fineness, and it were indeed difficult to conceive anything better for effect than a wall which has been tastefully covered with these distemper colours.

I have said that in the lower part of the house the colour should be light, but I do not mean to enforce that it should be actually blank white in every part. In some parts it should be white, in others shaded. In very dark rooms, in rooms where the Chappuis reflector is required, the purest white, unless the Chappuis brings in an unusual flood of light, is best. For the scullery the pure white is usually the best, as it is for all rooms that lie at the back of a house, and into which no direct ray of sunlight can make its way. But into rooms where light comes freely the colour may be shaded, and I think the best colour is a light green or a light grey. Next best to these is an orange, relieved by a violet border and by a stencilled flower at the corners. Perhaps for a kitchen tolerably lighted the orange colour is best.

Whichever colour may be preferred, the distemper is a good mode of putting it on. It is so convenient, that any workman who is at all skilled can use it; it is so cheap, that the walls may be coloured twice a year without ruination; it is so cleanly, that the most scrupulous sanitarian cannot find fault with it; and it is so perfect, that it admits of being made effective for the beautiful—yes, I may say safely for the beautiful—by any one of an artistic mind.





CHAPTER XXVI.

CELLARS AND CELLARAGE.



CELLARS under a dwelling-house are rather an advantage than otherwise, when they are properly used. The danger attaching to them is that they may easily be turned from their proper use. In their right place they are spaces which separate the rooms above them from the earth, and are good receptacles of things which require to be kept in a cool air, and which do not give off any gases or vapours that are injurious to the atmosphere of the dwelling-rooms above them. So long as they are in this way employed they are useful; but when they are so changed as to use as to be made living-rooms, or, as we have known, even bedrooms, then they are most mischievous, a real nuisance, an absolute danger. When, again,

they are turned to other though less hurtful purpose, when they are made the store-rooms for decomposing vegetable produce, for lumber, for any sightless, or useless, or disagreeable thing that need not be thrown away, but must for the time be stored away, then, again, they are misused.

When in use for the best purposes that can be devised, the cellar should be as carefully attended to as any part of the house. As much light as can be obtained ought to be let into it, its walls should be kept whitewashed, its floors should be kept dry, its windows open and clean, its shelves tidy, and the space in the centre of its floor free.

To the cellar special attention should be paid in respect to ventilation. Too much outside air cannot be let into it; in other words, too many spaces for letting the outer air in and out cannot be introduced into it, for here the ventilation has usually to be carried on without a draught for the removal of confined air. In one or two instances I have known a cellar ventilated by conveying a pipe from it upwards and into the back of a chimney on the ground floor, and when this has been done the place has been kept unusually sweet and wholesome for an underground room; and it would be a good provision, in building every new house with a cellar, to introduce such a pipe, because by its means the whole of the lower part of the house would be kept dry.

But, as in the vast majority of buildings there is no such provision, we must take as we find, and must do the best we can, by increasing to the fullest extent the openings for letting air both in and out.

In instances where the house is so placed that openings can be carried from the cellar at different points of the compass, it is wiser to make the openings at different points than all in one quarter, because then the current of the winds has its natural play, and of itself fans and ventilates. Suppose it were possible to have one opening in the south-west and another opening in the north-east, there would be good ventilation for about two-thirds of the whole year, because during that time the wind blows from the south-west.

Limewash is the best colouring substance for the walls of the cellar, but the walls themselves ought to be well prepared. Walls made of material which holds water are very bad. Yet I have often seen the walls actually of clay. The walls should be of good brick or stone, and should be so even that the colour is easily and evenly applied. The lime ought to be laid on with as little water as possible, so that it may dry rapidly, and the drying of the surface and the hardening of it may be much increased by the addition of plaster of Paris to the colouring solution.

The floors should be of well-seasoned wood, coated with gas-tar, so as to be protected from

the damp. I think this is much better than stone or brick. The floor should be raised at least one foot from the ground and supported on pillars of brick. The floor of the cellar can always be dried by the very simple process of emptying down upon it a bushel or two of thoroughly dry sawdust. Let the sawdust be equally spread out over the floor and left there for an hour or two and then swept up, and the floor will be both dry and clean. This inexpensive plan admits of being applied to damp floors in other rooms, for sawdust is one of the best absorbers of water and of the impurities which water carries. The sawdust, after it has served its purpose, can be spread out and dried in the sun, but it is more cleanly and healthy to burn it on each occasion after it has been used, and to take a new specimen each time for a new drying.

When these precautions are taken, the cellar is an advantage to a house. It is better to have it, though it be applied to no purpose whatever than for the house to stand immediately upon, raised above the ground.



CHAPTER XXVII.

LIVING-ROOMS.



It is good in every house to have two living-rooms, one in which to take meals (the dining-room), the other in which to sit and converse and see friends, the drawing-room or parlour. To these two rooms the rest of the house is often sacrificed. Sometimes to the one room alone—the parlour or receiving-room—all the other parts, even the bedrooms, have to give way. We need not wish to deny that a nice parlour is a good addition to every house, however small. It is a room in which the taste or mind of the householder is most fully displayed. When we enter a house and are shown into a neat, clean, comfortable, and well-arranged sitting-room, we feel that here is a house where people of good taste and feeling

and health may be expected to be living. We should, therefore, encourage always such excellent qualities. There ought to enter into the living-room as much simplicity of plan and of furniture as shall characterize the whole of the dwelling, and be in part with the whole. What has to be protested against, is the common system of making the sitting-room the receptacle of every kind of stuffed lumber that can be raked together, under the idea of rendering it cozy and luxurious, and richly furnished. The simpler the living-rooms are furnished in all particulars the better. An over-luxurious room, in which indulgence stares you in the face in every chair and table and couch, can never be a room that exhibits good taste, while it is usually a room which is very bad in taste of all kinds.

A healthy and cheerful and tasty living-room is in the first place a room of light. Light should find its way into every part. This means that there shall be good-sized windows always clean, as few blinds as possible, and no shade of those great obscuring, overhanging, heavy curtains which we so generally discover as the supposed choicest part of the ornamental belongings of the best room. Heavy curtains exclude the health-giving light. They interrupt the ready approach to the window, and very often prevent it from being opened. They catch dirt as if they were set up as traps for dirt. Their heavy folds entrap the dust, and when

they are drawn across the windows, as they sometimes are at night, a perfect sheet of dust is spread out into the air of an apartment which, naturally, becomes close in the evening from the circumstance that it is shut up and, it may be, is occupied by more persons than can find enough air for their natural requirements.

For these reasons heavy articles should be left out of the furniture of the living-room. They rob the room of light and air; they add nothing to the beauty, but they do add to the gloom, and they add materially to the dust.

The rule about superfluity of curtains extends to the carpet. The carpet which covers the whole of the floor of the room is not the carpet for a living-room. Such a carpet cannot be taken up without much trouble. Heavy articles like sideboards, cheffoniers, and couches, and bookshelves, are placed upon it, and so it becomes practically a fixture, catching and accumulating dust until at last every tread upon it sets free some cloud of dust, great or small, into the apartment.

To avoid these objections, the carpet selected for the dining-room or drawing-room ought to be so small that it shall leave at least two feet of space between its edges and the walls of the room all round. This space, on which chairs, couches, and other articles of furniture commonly are placed, should be either covered with oilcloth firmly fitted down, or should, as in the

bedroom, consist of closely jointed, evenly planed wood, coloured with wood stain and varnished, or well painted and varnished, or polished with beeswax and turpentine. On the whole, the last is probably the healthiest plan, but it has not the advantage of lasting so long without replenishment as the other plans.

The walls of the living-room, whether dining-room or parlour, should be covered with some material which can either be easily renewed or easily washed. A wall that is well and artistically painted in good oil colours is a wall against which nothing can be said in the matter of health, and presents to the eye, no doubt, a better appearance than that which is produced by the best distemper. But, perhaps, taking all things into consideration, a good washable paper like that which has been already described, or a smooth surface paper frequently renewed, is the most practical covering to recommend in the present day.

For the ceiling of the living-room distemper colour or whitewash is best. A modern practice of papering the ceiling has its advantages in point of good taste when it is well done, but it is expensive at first, and the paper soon becomes dirty, and has frequently to be renewed.

The warming and ventilation of the living-room require special care. There has as yet been nothing introduced for warming which takes the place of the open grate and coal-fire,

and we have in England become so accustomed to the sight of the open fire, it will be a very long day before a change of habit in respect to it will be introduced. Some improvements have, however, been made which should be generally known, the most important of these being the plan of allowing air warmed by the fire to pass from outside the house, and to be distributed through the room from an opening in the wall above the mantelpiece. Captain Galton's method for carrying out this purpose is simple and effectual; so also is that of Dr. Balbirnie, in which a large air space at the back of the grate receives the air for warming it previous to its distribution into the apartment. One striking advantage of this plan is that it prevents draughts of cold air into the warm room.

When air from the outside cannot be admitted after being warmed, it should be admitted cold, either by a Tobin tube or a Sheringham valve. The Sheringham valve is fixed near the ceiling, and admits air from the outside, directing the current of air upwards so as to prevent draught.

Provision should be made also for the escape of impure air from the room, and no outlet is so good for this as the chimney shaft. The late Dr. Neil Arnott's valve has for many years been the valve most in use for ventilation of the chimney, but lately Messrs. Kite have brought out a ventilator of still simpler

construction, which answers every purpose, and which has already been described.

The size of the outlet for air should be the same as that for the inlet, so that the balance of entrance and exit of air may, as far as it is possible, be sustained.





CHAPTER XXVIII.

THE ROOF OF THE HOUSE.



FROM the basement, let us make a last movement to the top of the dwelling. Let us bestow a few minutes of attention on the roof.

We all know that to be shielded from the inclemency of the weather is one of the first and most important considerations connected with the building of human habitations. Yet it is most remarkable how little attention is paid by householders to the form and condition of the roof. The roof may take any form. It may be a pointed roof; a roof with almost perpendicular sides; a roof with many angles; a roof all but flat; a roof quite flat, so that persons can walk upon it, and turn it, if they please, into a garden.

So much for shape. There may be as great

or greater variety in the way of material for its construction. I have seen roofs of slate, tile, brick, wood, stone, reeds, thatch, felt, lead, zinc, iron, glass, concrete, asphalte, turf. Indeed, as far as I am aware, there is no rule, whatsoever, as to the best substance for roof making. For material, men take, usually, that which is most conveniently found ; for shape, they follow their own tastes, the fashion which prevails in the districts in which they dwell, or the caprice of the builder—the last most. At the present moment I am writing before the window of the upper part of a London house from which there is a wide view of roof tops. I count, without trouble, thirteen different shapes of roofs, and five different kinds of material ; slate predominates, but there is red tile, white tile, glass, and zinc, or some other metal.

MATERIALS FOR THE ROOF.

It cannot be supposed, for one moment, that general good health can be maintained while there is so much variety of practice in regard to the roofs which cover the heads of the people. If the roof be made of pure metal like zinc, it gets extremely hot in summer and cold in winter : it conducts heat and it robs heat. Metal, therefore, is most inadvisable. If the house be covered with thatch, it is like a house under a blanket ; it is always as warm as it can be made by its roofing in winter, and is always cool in

summer because the thatch is a bad conductor, and in dry weather these are advantages. But against such advantages there is the set-off that the thatched roof is an absorbent of wet, like a sponge. Thatch soon rots; it requires to be frequently mended or replaced, and it is the constant home of sparrows, who tunnel it with holes for their nests. To these evils another and most serious one must be added. The thatched roof is the most favourable nesting place for the poisons of those spreading diseases which kill so many children. Let the poisons of small-pox, or scarlet-fever, or measles, enter a thatched dwelling, and that dwelling is probably never safe again until the roof is entirely removed. Just as the eggs of the sparrows lie on the outside of such a roof in the warm nest, and just as from these eggs the new brood of sparrows come forth in due season, if the conditions be favourable, so these organic poisons, once carried by the air from a sick person to the inner surface of the roof, are laid up there, and become sources of infection to those who, sleeping under the roof, are liable to infection.

I dwell on this particular roofing, and the dangers belonging to it, with particular care because in country places such an immense number of cottages are still roofed with thatch. The poor know little of the danger, and, if they did, would hardly have it in their power to avoid it. But the rich, they who build the cottages,

or who have them on their estates, ought to know and ought to be ready to remedy an evil which lies ever at their own doors.

The best material for roofing is good slate, if the roof is to have a slanting roof. But I am of opinion that a slanting roof is not a good roof. If a roof is to slant, then the space which is immediately beneath it, the cock-loft, as it is called, should never be occupied as a sleeping room. In such a place the sudden variations of heat and cold are extremely severe, and the risks of taking cold and of suffering from inflammatory attacks, especially in the bronchial tubes and the lungs, are at all seasons of the year imminent in a climate so variable as ours.

Against the sharp-pointed long roofs, in which as much space as is possible is thrown into the roof space, too much cannot be urged on the health side of the question. Houses roofed in this fashion can never be evenly warmed, and can never be scientifically ventilated.

On the whole, the best roof is one that is nearly flat, raised in the centre just enough to allow for a flow of water into the gutter, a roof that is, say, like the roof of an old church, with the low battlemented wall surrounding it. Such a roof, made of good nonconducting material, slate set in cement, lead laid on wood with an intervening layer of felt or wool, or, asphalte arched on wood, is the best. I lived for twenty-six years in a London house possessing an asphalte roof, the first, I believe, of the kind

ever erected in London, and I can say of it that it was simply perfect. It never let in water ; it was readily cleared of snow in winter ; it formed a surface which could have been turned into a garden or playground ; and it caused the temperature of the rooms down to the ground-floor itself to be more easily equalized than I have ever before known in any house I have visited.

In all large towns the roof of the house should be a garden. I have shown elsewhere—in an essay on “Upper London”—that if all London houses were built of uniform height, and if the roofs were turned into long and beautiful terraces with walks in the centre, flowers at the side, and cross bridges to connect streets and squares, the whole metropolis would be transformed into a physical paradise. The traffic of the crowded streets would be relieved ; the arrangements for postal and telegraphic deliveries would be immensely facilitated ; the means for extinguishing fires would be so readily at hand as to render large fires practically impossible ; and the health, as well as the happiness of the vast population, would be improved beyond anything of which at present we have a conception. There would be no smoke, for that would be consumed with the utmost facility in furnaces constructed on the terraces for the purpose ; there would be all the richness of trees and flowers overhead ; there would be pure light, pure air, and splendid scenery at the command of every citizen, young

and old. Upper London would, in fact, be London in the country.

I shall not live to see this idea fulfilled, but fulfilled it will be. I refer to it in this place and in this every-day essay, in order that my readers may dream of it as I have done, and may help forward its development in all great centres where multitudes congregate and live together.





CHAPTER XXIX.

A SHORT SUMMARY.



WE have now passed through all parts of the dwelling-house, looking carefully into each room, nook, and corner, and studying how each can be made most healthy and be brought into healthy harmony with the house as a whole. Let me now, in a very short summary, utilize the last and concluding pages for a few of the more important precepts relating to Household Health.

1.

Let habits of health be the habits of life.

2.

Let the sun fill the dwelling, and let no dust charge his beam.

3.

Let the house bear witness of its cleanliness by its outward character. Clothe it in cleanness.

4.

Let the air within the house be sweet and pure everywhere, in the places least visited and named as much as in the rooms most frequented and most spoken of.

5.

Exclude damp, and let no sign of dampness indicate danger to health.

6.

Take care that every impurity formed in the house is removed as it is formed.

7.

Encourage every method that keeps the air of the dwelling at an even temperature, and give bedrooms the first care in this respect.

8.

Purify the drinking water, and let nothing less pure or less hurtful than pure water be used for drink.

9.

Preserve and treat food as you would your own body, remembering that food will in time be your body, and that what is will be.

10.

Combine in the household all that makes the house healthy with all that makes it beautiful. So shall body and mind be alike wholesomely nourished, and alike fitted for long and happy life.



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